Rev. 00

Service Manual
DLP Digital Projector

Model Name: EX774/EW674

Revision	Description	Date
Rev.00	Preliminary	07/02/2008

CONTENTS

1.COMPLIANCE OF SAFE REPAIR.....4
1-1.Cautions During Disassembling And Assembling.....4
1-2.Lamp.....4
1-3.Lens.....4
2.SPECIFICATIONS.....5
2-1.Summary Specifications.....5
2-2.Input/output connectors.....6
2-3.Description of Wire Connection.....7
2-4.Remote Control keypad.....10
2-5.Control Key Pad and LED.....12
2-6.BLOCK DIAGRAM.....13
3.TROUBLE SHOOTING.....14
4.DISASSEMBLY AND ASSEMBLY.....20
5.Firmware.....29
5-1.Projector USB Drivers Installation Guide.....29
5-2.DLP Projector Flash-Tool (firmware) User Guide.....38
5-3.DLP Projector Flash-Tool (splash logo) User Guide.....42
5-4.Security Timer.....47
5-5.Starting and Shutting down the Projector.....48
5-6.Setting an Access Password (Security Lock).....49
6.Calibration.....51
6-1.Calibrate Analog RGB.....52
6-2.Calibrate Analog YUV.....53
6-3.Color Wheel Index, DMD Contrast and Brightness Adjustment @ RGB source..54
6-4.Display Test.....55
6-5.Logo Advanced.....56
6-6.Color Border Adjustment.....57
7.How To Program By RS232.....58
7-1.RS232 VGA-In Connector.....58
7-2.RS232 Protocol Function List.....59
7-3.Hyper Terminal setting guide.....61
8.LAN_RJ45 (RJ45 models only).....65
9.Projection Lamp.....70
9-1.Replacing the Projection Lamp.....70
9-2.Resetting the Lamp.....71
9-3.Ceiling Installation.....72
10.SERVICE NOTE.....73
10-1.Cleaning.....73
10-2.Remote Control For Battery Replacement.....75
10-3.Power & READY LED Blink Code Message.....76
10-4.Factory Preset Display Modes.....77
10-5.Spare parts list 79
10-6.Carton.....81

1. COMPLIANCE OF SAFE REPAIR

Be sure to read this Service Manual before providing services. In the projector, full consideration is taken to ensure the safety for a fire, electric shock, injury, harmful radiation, and substance. Therefore, observe the notice described in this Service Manual so that the safety is kept when providing services. Moreover, be sure to observe the notice described in the Instruction Manual. Pay attention to the following during service inspection.

1-1. Cautions during disassembling and assembling

1. This equipment contains parts under high voltage. When making repairs, etc. Be sure to pull out the power plug beforehand to insure safety.
2. Parts may be very hot immediately after use. Make sure the equipment has cooled off sufficiently before carrying out repairs.
3. Make sure that parts and screws and wiring, etc. are returned to their original positions. Tube, tape and other insulation materials have been used for safety reasons. The internal wiring has been designed to avoid direct contact with hot parts or parts under high voltage when using clamps or other tools.
4. The parts used in this device have special safety features such as flame-resistance and anti-voltage properties. When replacing parts, always use parts supplied from the factory.
5. After finishing operations make sure that all parts and wires have been returned to their original position and that there has been no deterioration of the area around the location that was worked on.
6. Be sure to use an earth band (wrist band) during repair and inspection.

1-2. Lamp

During current conduction, the lamp is in the high-temperature state. In this case, pay careful attention because a high voltage is used. When replacing a lamp, replace it after confirming that the lamp has gotten cold sufficiently.

1-3. Lens

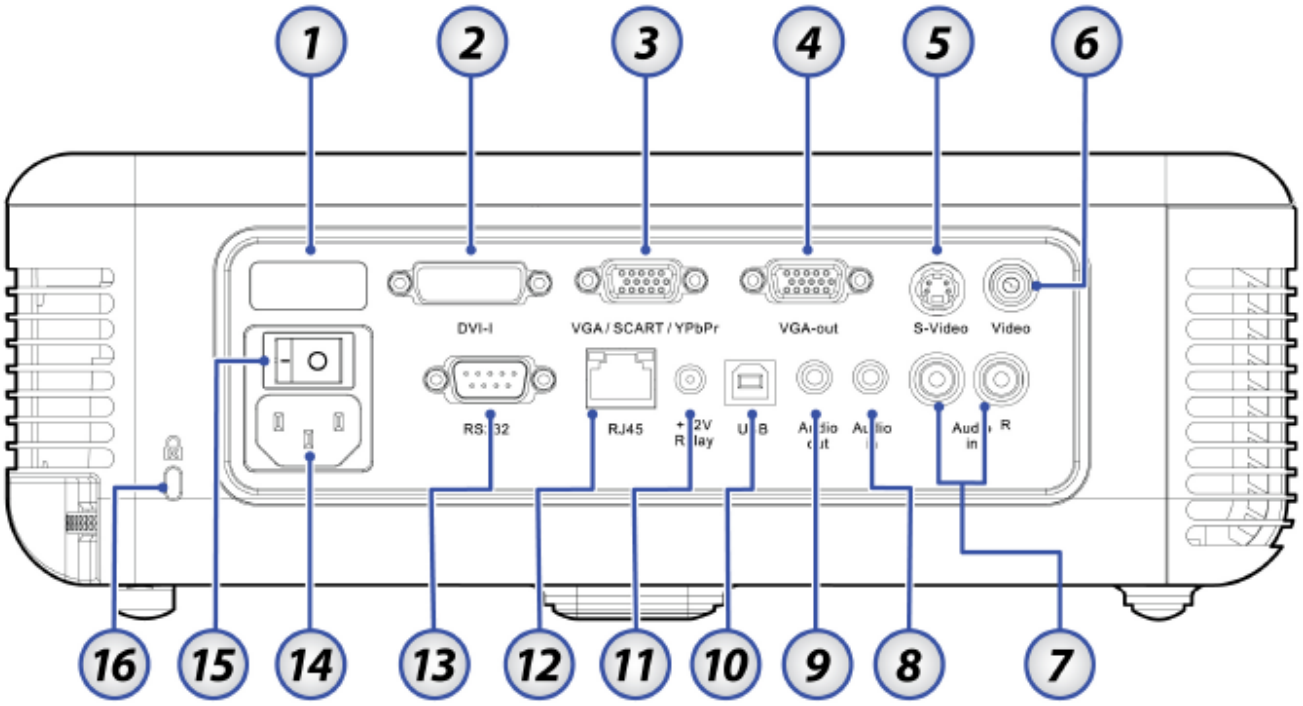
Do not look through a lens during projection. This damages your eyes.

2. SPECIFICATIONS

2-1. Summary Specifications

Model	EX774_DP-3633	EW674_DP-7626
Display type	"TI" DMD 12° , 0.7" x 1, XGA	"TI" DMD 12° , 0.65" X1, WXGA
Resolution	XGA 1024x768 Native	WXGA 1280 x 800 Native
Color	Graphic: 24-bit 16.7M color (UXGA@60Hz) Video: 27-bit 134M color (1080p) 16-bit 64k	
Projection distance	1m to 11.2m	1m to 10m
Projection screen size	23.4"~300"	26.68"~307.5"
Projection lens	Zoom Lens (manual)	
Zoom Ratio	1.15:1	
Vertical keystone correction	+/- 30°	
Projection methods	Front / Rear-Desktop & Front / Rear-Ceiling	
Data compatibility	IBM PC or compatibles (VGA, SVGA, XGA, SXGA, UXGA), Mac	
SDTV/EDTV/ HDTV	480i/576i, 480p/576p, 720p, 1080i	
Video compatibility	NTSC/NTSC 4.43, PAL/PAL-M/PAL-N,SECAM	
H-Sync	15, 31~90KHz	
V-Sync	50 - 85 Hz	
Safety certification	UL, CUL, TUV-GS, CCC, FCC class B, ICES-003, CE Class B, CB, EK, PSB	
Operation temperature	5~ 40 °C	
Dimensions / Weight	300mm x 244mm x 100.5mm(8.2 lb)	
AC Input	AC Universal 110 ~ 240 @50~60Hz , Typical @110 VAC (100~240)/±10%	
Power consumption	Typical 350W (standard mode); Typical 300W (ECO mode)	
Stand By	< 5 watts @ 110Vac	
Lamp	Osram E20.6, 280W	
Audio speaker	3 w mono speaker (SPL <= 5W)	
PC	VGA in (Compatible with HDTV component YPbPr / SCART)	
	DVI in (DVI-I connector accept DVI-D and DVI-A signal)	
Video	Composite video (RCA X 1)	
	S-Video (Mini DIN)	
Audio	Input: R / L (RCA X 2), Mini-Jack X 1 Out: Mini-Jack X 1	
Control	USB (USB-B mouse + keypad emulation + Flash upgrade)	
	RS-232 (Room Control)	
	RJ45 management (RJ45)	
	Screen Control (12v relay)	
Security	Kensington lock	

2-2 Input/output connectors



1. Rear IR Receiver
2. DVI-I Connector
3. VGA/ SCART/ YPbPr Connector
4. VGA-out
5. S-Video Input Connector
6. Video Input Connector
7. Audio Input Connector (left and right)
8. Audio In
9. Audio Out
10. USB Connector (Connect to PC for Remote Mouse function)
11. +12V Relay
12. RJ-45 Connector (RJ45 function is dependent on the model purchased)
13. RS-232 Connector
14. Power Socket
15. Power Switch
16. Kensington™ Lock Port

2-3. Description Of Wire Connection

2-3-1 Accessories List

1. AC Power Cord x 1 (US 1.8m)
2. Computer Cable VGA to VGA (1.8m)
3. USB Cable, A to B (1.8m)
4. Composite cable RCA * 1 (1.8m)
5. WEEE card
6. Remote Controller with laser pointer
7. Quick start card
8. Carrying case with Optoma Logo
9. Warranty card
10. User's Manual (CD) (23 languages)

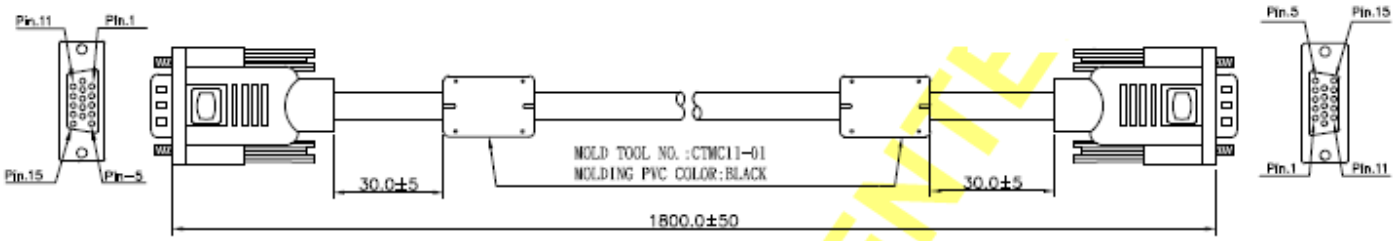
2-3-2 Accessories Wire Description

USB Cable (1.8m) 308140490X

SHELL	DRAIN	SHELL
4	BLACK	4
3	GREEN	3
2	WHITE	2
1	RED	1
J2	WIRE COLOR	J2
WIRE CONNECTION TABLE		

Rev. 00

CABLE SIGNAL D-SUB D-SUB L1800 BLK (RGB CABLE 1.8m) P/N：308140500X



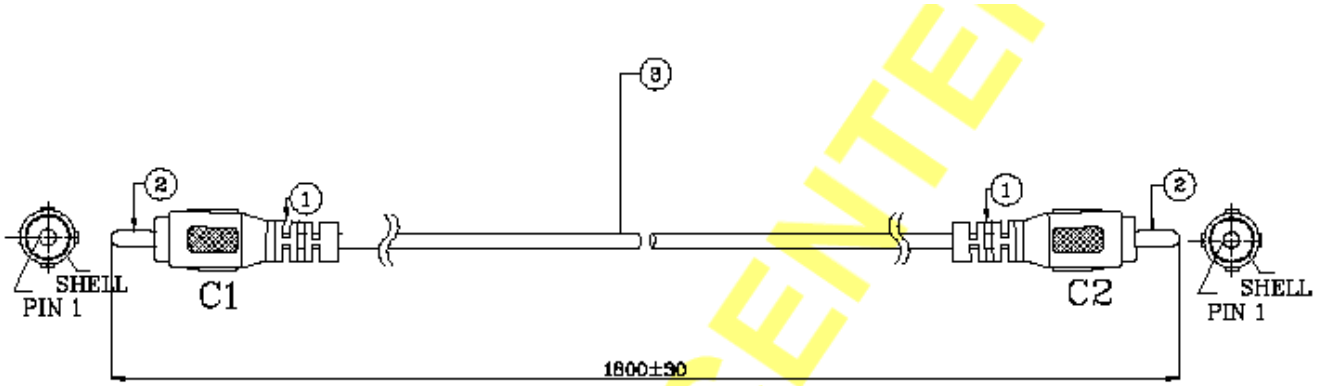
WIRING TABLE

P1	WIRE COLOR	P2
1	RED(COAX COND)	1
2	GRAY(COAX COND)	2
3	BLUE(COAX COND)	3
4 5 11	WHITE	4 5 11
6	RED(COAX SHIELD)	6
7	GRAY(COAX SHIELD)	7
8	BLUE(COAX SHIELD)	8
10	BROWN	10
12	YELLOW	12
13	ORANGE	13
14	GREEN	14
15	BLACK	15
CASE	BRAID SHIELD CASE	CASE

MATERIAL LIST

NO.	MATERIAL	Q'TY
1	H.D CONN: 15P (3x5) MALE SOLDER TYPE BLACK PBT INSULATOR TIN PLATED BACK SHELL	2Set
2	SCREW: #4-40UNC-2A NICKEL PLATED (GTL-093)	2Set
3	CABLE: UL/CSA20276 (#30*1C+S)*3+#28*6C+AEB GTL-005 OD=6.0mm 3COAX: UL 1354 #28 (RED,GRAY,BLUE) 6C: (BLACK,YELLOW,ORANGE,WHITE,BROWN,GREEN)	1PC
4	CORE: ϕ 14.2*28.5* ϕ 7.0mm	2PCS
5	JUMP WIRE: UL 1061 #26 BLACK (L=40*3*15mm)	12PCS
6	META CAN: 9P ⌀8.0 TIN PLATING	6PCS
7	PE	12g
8	PVC: BLUE (GTL-093) 45P	40g
	PVC: BLUE (GTL-093) 30P	2g*4
	PVC: BLACK (GTL-005) 45P	20g
9	COPPER-FOIL: W=5mm L=40mm	2PCS

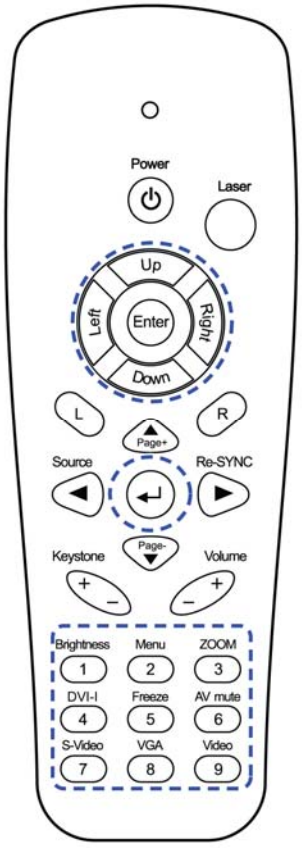
CABLE SIGNAL RCA RCA L1800 YEL (1.8m) P/N：308030110X



COMPONENT			UNIT	
AUDIO WIRE	No. OF AUDIO WIRE		EACH	1
	CONDUCTOR	CONSTITUTION		28AWG(7/36AWG(0.127MM))
		MATERIAL		TINNED STRANDED COPPER
		O.D.	MM	
	INSULATION	MATERIAL		FOAM PE
		THICKNESS	MM	0.25
		O.D.	MM	1.45 MIN.
		COLOR		WHITE (OPTIONAAL)
	BRAID SHIELD	CONSTITUTION		16/5/38AWG(0.10MM)
		MATERIAL		TINNER COPPER
		COVERAGE	%	85% MIN.
	AL/MYLAR (FACE OUTSIDE)	THICKNESS	MM	0.025
		COVERAGE	%	100
		OVERLAP	%	25 MIN.
JACKET	MATERIAL			PVC
	THICKNESS		MM	0.38 MIN.
	O.D.		MM	3.1±0.1
	COLOR			SEE TABLE
IMPEDANCE				75 OHMS AT 1M Hz
04 SAFETY				UL 1354
MARKING: (THE SURFACE PRINTING MUST BE INCLUDE)				(1) ๑ AWM (2) FILE No. (3) MANUFACTURER NAME (4) UL STYLE 20276 (5) TEMPERATURE RATING: 80°C (6) VOLTAGE RATING: 30V (7) VW-1 (8) 28AWG (9) COLOR OF PRINTING – SEE TABLE

CENTER DOC CFI

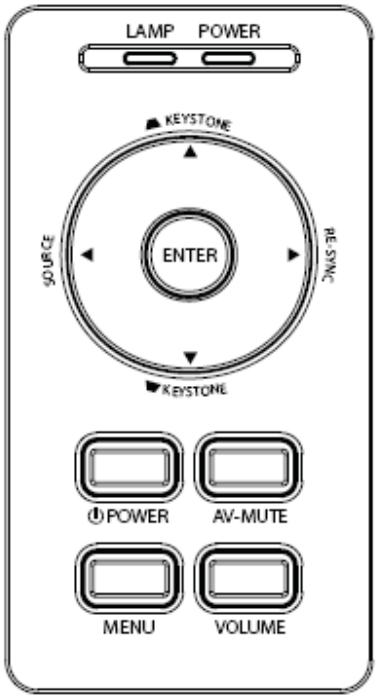
2-4. Remote Control Keypad



Using the Remote Control	
Power	Refer to the "Power On/Off the Projector" section on page 15.
Laser	Aim the remote at the viewing screen, press and hold this button to activate the laser pointer.
PC / Mouse control	The PC/Mouse control can be used to control mouse movement. The mouse function is enabled using the USB cable to connect your computer and the projector.
L Button	Mouse left click.
R Button	Mouse right click.
Page +	Use this button to page up.
Page -	Use this button to page down.
Enter ↵	Confirm your item selection.
Source	Press **Source** to select an input signal.
Re-Sync	Automatically synchronizes the projector to the input source.
Four Directional Select Keys	Use ▲▼◄► to select items or make adjustments to your selection.
Keystone +/-	Adjusts image distortion caused by tilting the projector. (±30 degrees)
Volume +/-	Adjusts to increase/decrease the volume.
Brightness	Adjust the brightness of the image.

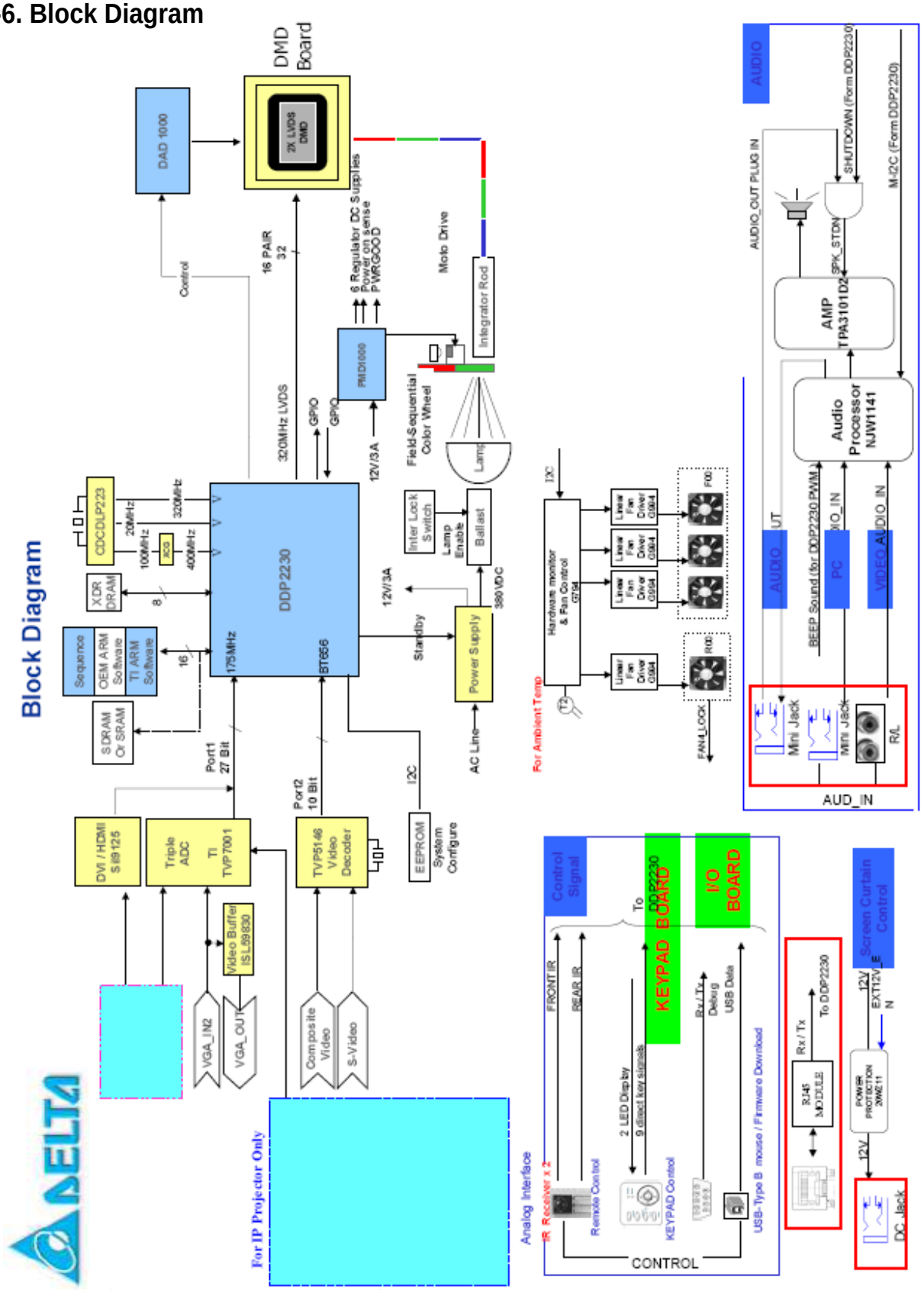
Using the Remote Control	
Menu	Press **Menu** to launch the on-screen display (OSD) menu. To exit OSD, Press **Menu** again.
Zoom	Press **+/-** to zoom in of an image.
DVI-I	Press **DVI-I** to choose source from DVI-A, DVI-D or DVI-I connector.
VGA	Press **VGA** to choose source from VGA- IN connector.
AV Mute	Momentarily turns off/on the audio and video.
S-Video	Press **S-Video** to choose S-Video source.
Freeze	Press **Freeze** to pause the screen image.
Video	Press **Video** to choose Composite video source.

2-5. Control Key Pad and LED



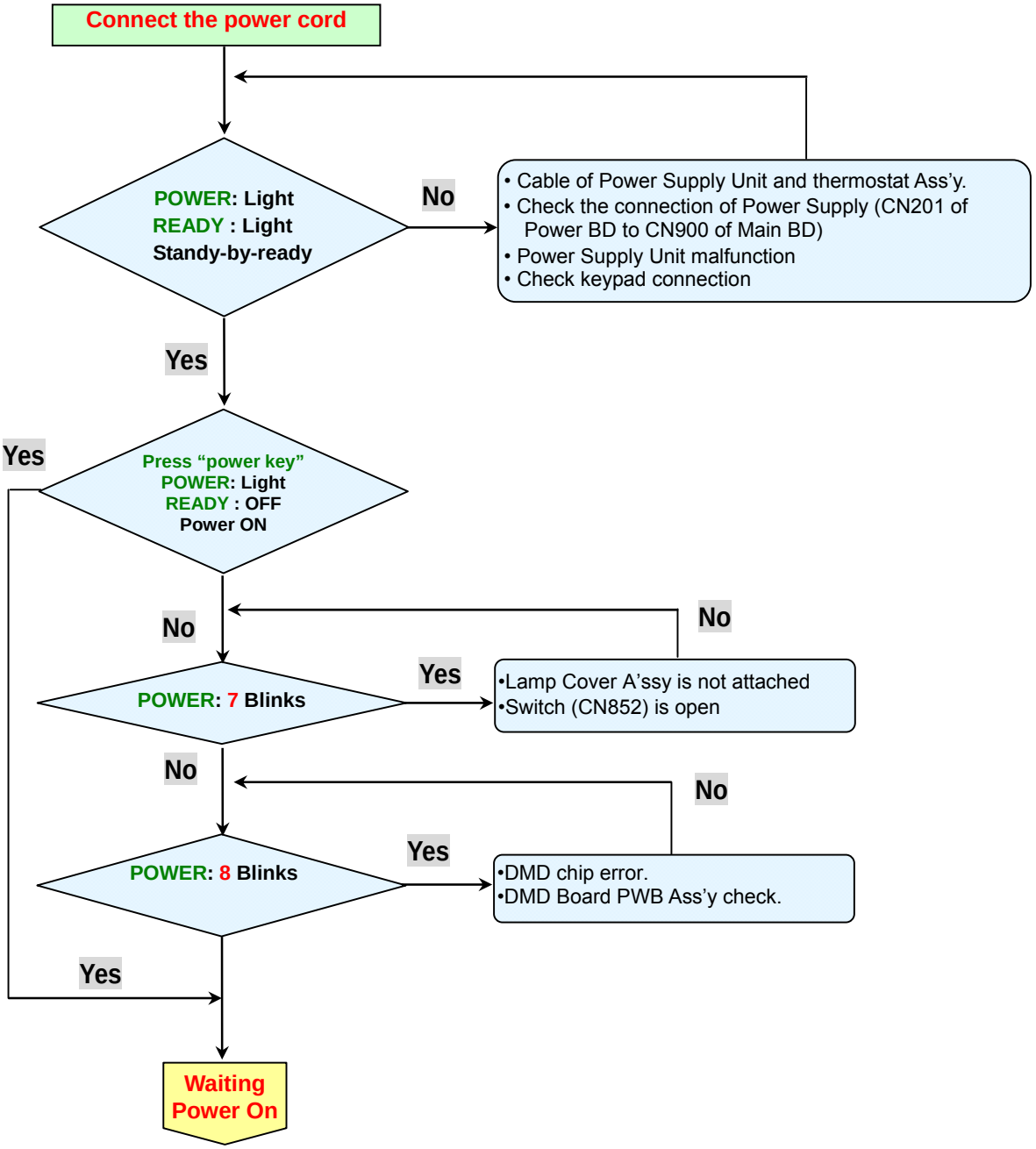
Using the Control Panel	
KEYSTONE ▲	Adjust the image Keystone positively.
ENTER	Confirm your item selection.
LAMP LED	Indicate the projector's lamp status.
POWER LED	Indicate the projector's status.
POWER	Refer to the "Power On/Off the Projector" section on page 15.
AV-MUTE	Momentarily turns off / on the audio and video.
MENU	Press **MENU** to launch the on-screen display (OSD) menu. To exit OSD, Press **MENU** again.
RE-SYNC	Automatically synchronizes the projector to the input source.
KEYSTONE ▼	Adjust the image Keystone negatively.
SOURCE	Press **SOURCE** to select an input signal.

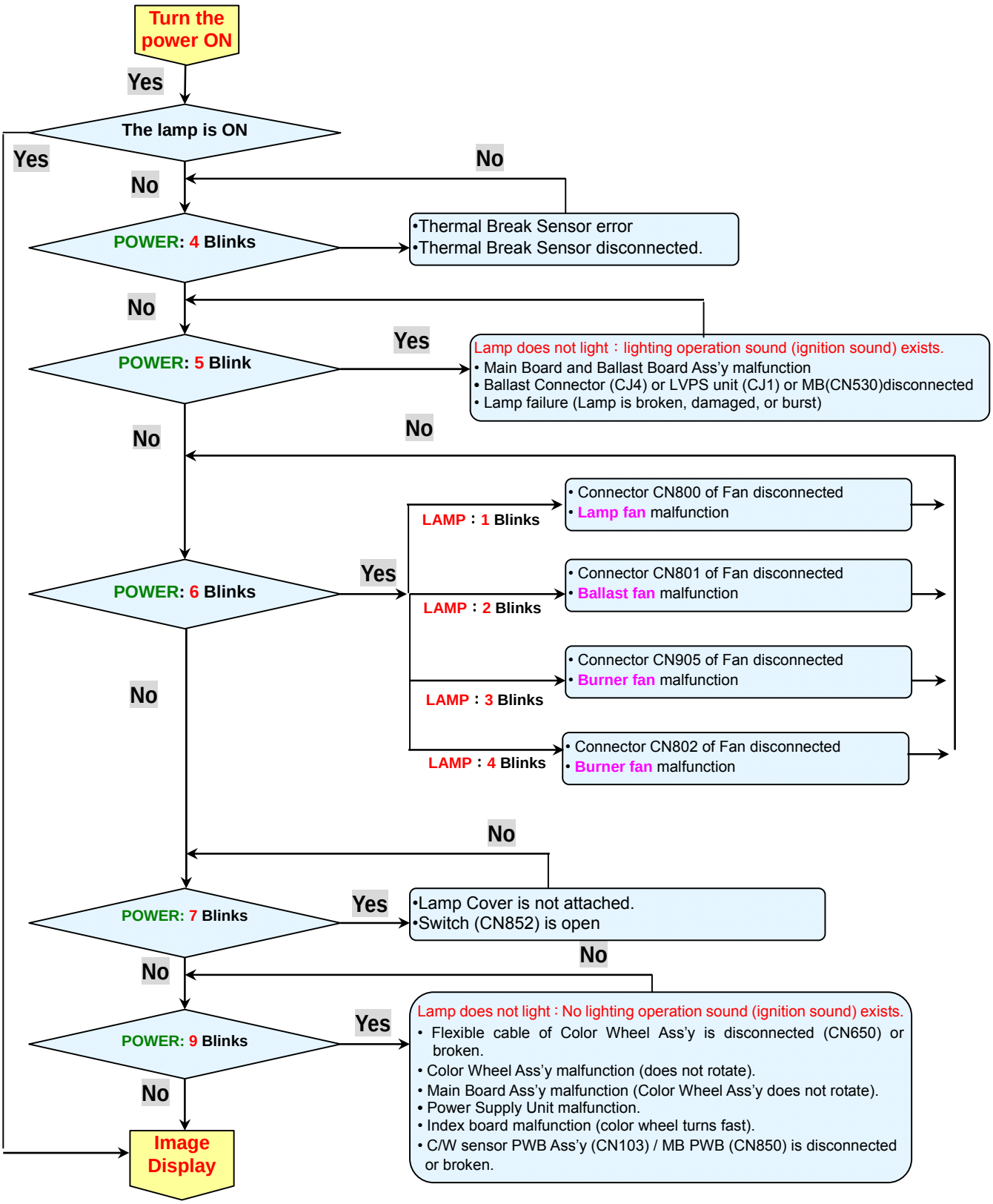
2-6. Block Diagram



3. TROUBLE SHOOTING

By checking operations during normal usage time, it is possible to carry out judgments on malfunction to a certain extent. Carry out the following checks before disassembling the equipment.




Turn the power ON
Yes
The lamp is ON
Yes
No
No
No
POWER: 4 Blinks
•Thermal Break Sensor error
•Thermal Break Sensor disconnected.
No
Yes
POWER: 5 Blink
Lamp does not light：lighting operation sound (ignition sound) exists.
• Main Board and Ballast Board Ass'y malfunction
• Ballast Connector (CJ4) or LVPS unit (CJ1) or MB(CN530)disconnected
• Lamp failure (Lamp is broken, damaged, or burst)
No
No
POWER: 6 Blinks
Yes
LAMP：1 Blinks
• Connector CN800 of Fan disconnected
• Lamp fan malfunction
LAMP：2 Blinks
• Connector CN801 of Fan disconnected
• Ballast fan malfunction
LAMP：3 Blinks
• Connector CN905 of Fan disconnected
• Burner fan malfunction
LAMP：4 Blinks
• Connector CN802 of Fan disconnected
• Burner fan malfunction
No
No
POWER: 7 Blinks
Yes
•Lamp Cover is not attached.
•Switch (CN852) is open
No
No
POWER: 9 Blinks
Yes
Lamp does not light：No lighting operation sound (ignition sound) exists.
• Flexible cable of Color Wheel Ass'y is disconnected (CN650) or broken.
• Color Wheel Ass'y malfunction (does not rotate).
• Main Board Ass'y malfunction (Color Wheel Ass'y does not rotate).
• Power Supply Unit malfunction.
• Index board malfunction (color wheel turns fast).
• C/W sensor PWB Ass'y (CN103) / MB PWB (CN850) is disconnected or broken.
No
Image Display

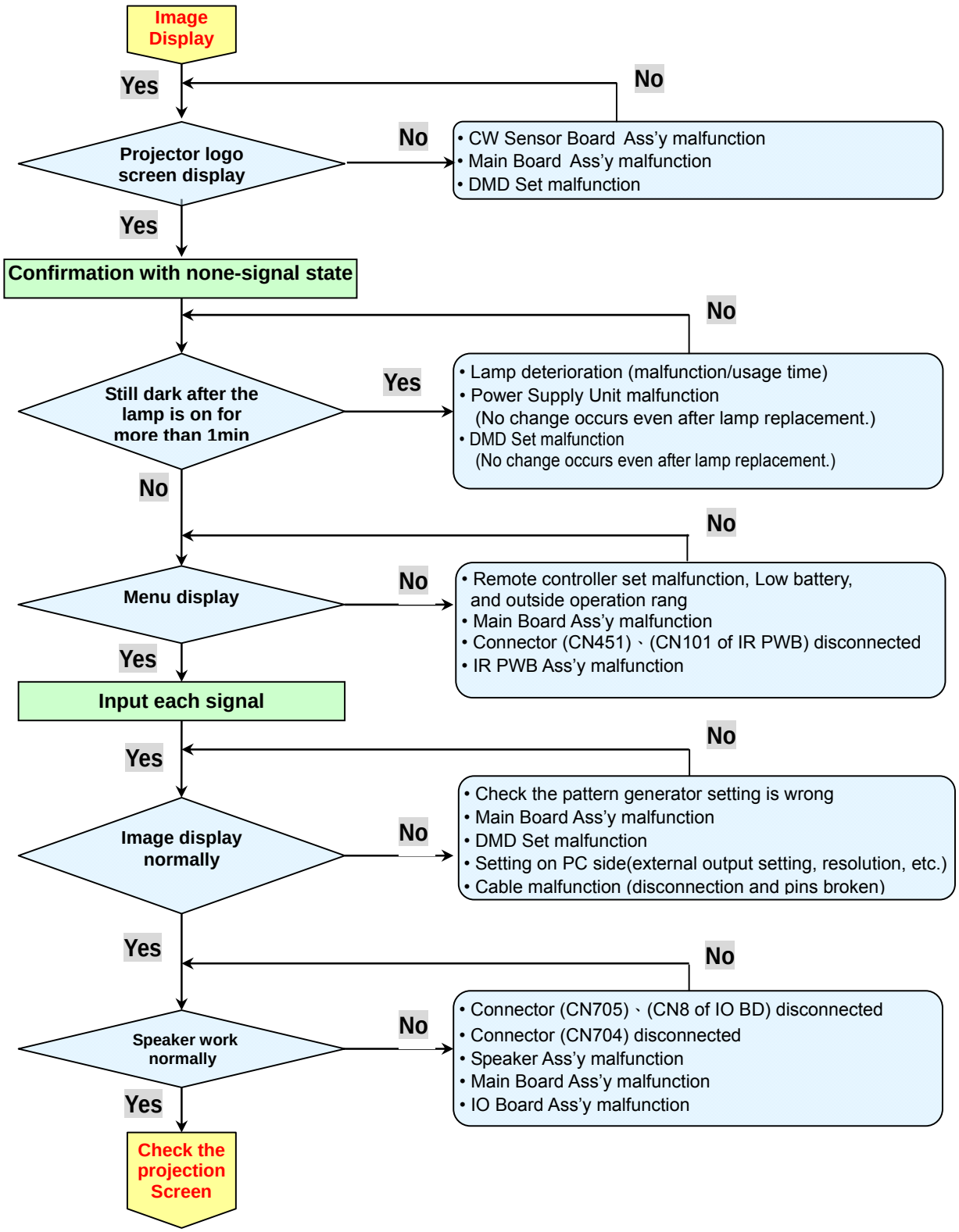


Image Display
Yes
No
Projector logo screen display
No
• CW Sensor Board Ass'y malfunction
• Main Board Ass'y malfunction
• DMD Set malfunction
Yes
Confirmation with none-signal state
No
Still dark after the lamp is on for more than 1min
Yes
• Lamp deterioration (malfunction/usage time)
• Power Supply Unit malfunction
(No change occurs even after lamp replacement.)
• DMD Set malfunction
(No change occurs even after lamp replacement.)
No
No
Menu display
No
• Remote controller set malfunction, Low battery, and outside operation rang
• Main Board Ass'y malfunction
• Connector (CN451)、(CN101 of IR PWB) disconnected
• IR PWB Ass'y malfunction
Yes
Input each signal
No
Yes
Image display normally
No
• Check the pattern generator setting is wrong
• Main Board Ass'y malfunction
• DMD Set malfunction
• Setting on PC side(external output setting, resolution, etc.)
• Cable malfunction (disconnection and pins broken)
Yes
No
Speaker work normally
No
• Connector (CN705)、(CN8 of IO BD) disconnected
• Connector (CN704) disconnected
• Speaker Ass'y malfunction
• Main Board Ass'y malfunction
• IO Board Ass'y malfunction
Yes
Check the projection Screen

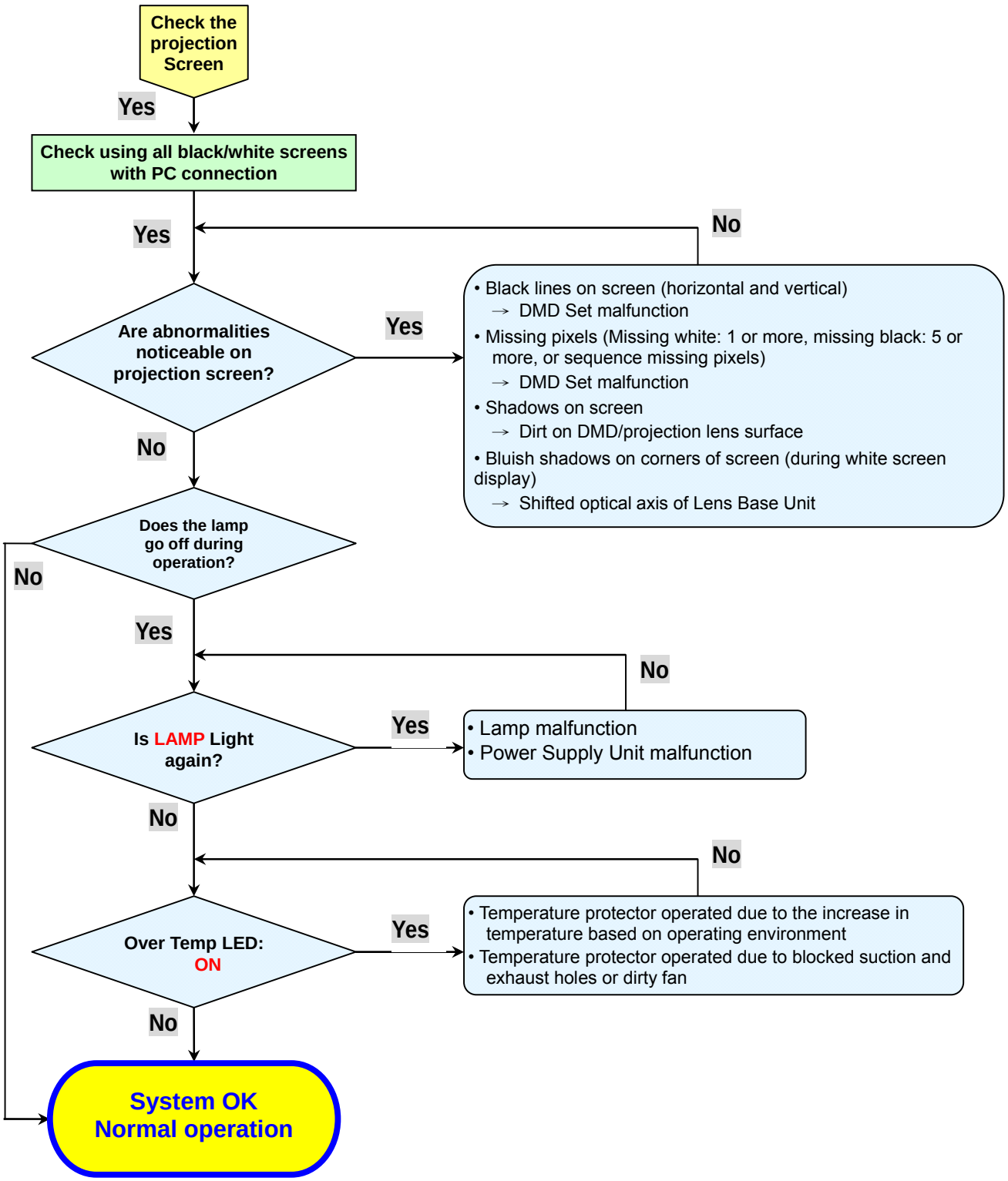

Check the projection Screen
Yes
Check using all black/white screens with PC connection
Yes
No
Are abnormalities noticeable on projection screen?
Yes
• Black lines on screen (horizontal and vertical)
→ DMD Set malfunction
• Missing pixels (Missing white: 1 or more, missing black: 5 or more, or sequence missing pixels)
→ DMD Set malfunction
• Shadows on screen
→ Dirt on DMD/projection lens surface
• Bluish shadows on corners of screen (during white screen display)
→ Shifted optical axis of Lens Base Unit
No
Does the lamp go off during operation?
No
Yes
No
Is LAMP Light again?
Yes
• Lamp malfunction
• Power Supply Unit malfunction
No
No
Over Temp LED: ON
Yes
• Temperature protector operated due to the increase in temperature based on operating environment
• Temperature protector operated due to blocked suction and exhaust holes or dirty fan
No
System OK
Normal operation

Image Problems

No image appears on-screen

Ensure all the cables and power connections are correctly and securely connected as described in the **Installation** section.

Ensure all the pins of connectors are not bent or broken.

Check if the projection lamp has been securely installed. Please refer to the **Replacing the lamp** section.

Make sure you have removed the lens cap and the projector is switched on.

Partial, scrolling or incorrectly displayed image

Press “Re-Sync” on the remote.

If you are using a PC:

For Windows 95, 98, 2000, XP:

1. Open the **My Computer** icon, the **Control Panel** folder, and then double click on the **Display** icon.
2. Select the **Settings** tab.
3. Verify that your display resolution setting is lower than or equal to UXGA (1600 x 1200).
4. Click on the **Advanced Properties** button.

   If the projector is still not projecting the whole image, you will also need to change the monitor display you are using. Refer to the following steps.
5. Verify the resolution setting is lower than or equal to UXGA(1600 x 1200).
6. Select the **Change** button under the **Monitor** tab.
7. Click on Show all devices. Next, select Standard monitor types under the SP box; choose the resolution mode you need under the “Models” box.
8. Verify that the resolution setting of the monitor display is lower than or equal to UXGA (1600 x 1200). (*)

If you are using a Notebook:

1. First, follow the steps above to adjust resolution of the computer.
2. Press the toggle output settings. Example: [Fn]+[F4]

Acer ⇨	[Fn]+[F5]	IBM/Lenovo ⇨	[Fn]+[F7]
Asus ⇨	[Fn]+[F8]	HP/Compaq ⇨	[Fn]+[F4]
Dell ⇨	[Fn]+[F8]	NEC ⇨	[Fn]+[F3]
Gateway ⇨	[Fn]+[F4]	Toshiba ⇨	[Fn]+[F5]

Mac Apple:
System Preference ⇨ Display ⇨ Arrangement ⇨ Mirror display

If you experience difficulty changing resolutions or your monitor freezes, restart all equipment including the projector.

The screen of the Notebook or PowerBook computer is not displaying your presentation

If you are using a Notebook:

Some Notebooks may deactivate their own screens when a second display device is in use. Each has a different way to be reactivated. Refer to your computer's manual for detailed information.

Image is unstable or flickering

Use **Phase** to correct it.

Change the monitor color setting on your computer.

Image has vertical flickering bar

Use **Frequency** to make an adjustment.

Check and reconfigure the display mode of your graphic card to make it compatible with the projector.

Image is out of focus

Make sure the lens cap is removed.

Adjusts the Focus Ring on the projector lens.

Make sure the projection screen is between the required distances from the projector.

The image is stretched when displaying 16:9 DVD title

When you play anamorphic DVD or 16:9 DVD, the projector will show the best image in 16:9 format on projector side. If you play 4:3 format DVD title, please change the format as 4:3 in projector OSD.If the image is still stretched, you will also need to adjust the aspect ratio by referring to the following:

Please setup the display format as 16:9 (wide) aspect ratio type on your DVD player.

Image is too small or too large

Adjust the Zoom Ring on the top of the projector.

Move the projector closer to or further from the screen.

Press [Menu] button on the remote control or projector panel, go to **Display | Format** and try the different settings.

Image has slanted sides

If possible, reposition the projector so that it is centered on the screen and below the bottom of the screen. Press [Keystone +/-] button until the sides are vertical on the remote control.

Image is reversed

Select **Setup | Projection** from the OSD and adjust the projection direction.

Intermission Problems

The projector stops responding to all controls

If possible, turn off the projector, then unplug the power cord and wait at least 60 seconds before reconnecting power.

Lamp burns out or makes a popping sound

When the lamp reaches its end of life, it will burn out and may make a loud popping sound. If this happens, the projector will not turn on until the lamp module has been replaced.

4. DISASSEMBLY AND ASSEMBLY

Removing the Lamp Module and Lamp Cover

Look at Top Case side.

Loose the two screws.

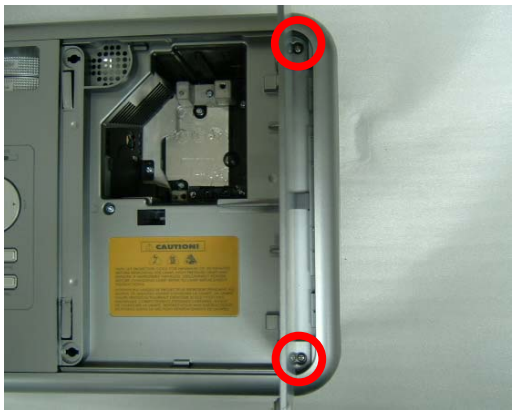
Open the lamp cover.

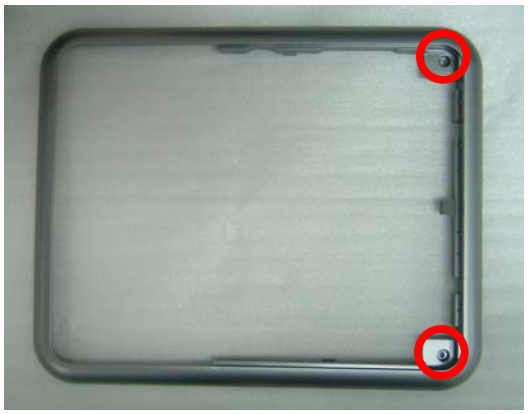
Loose the two screws and then take out the lamp module by the ring-pull.

Lamp module views.

Lamp holder views.

Removing the Top Cover



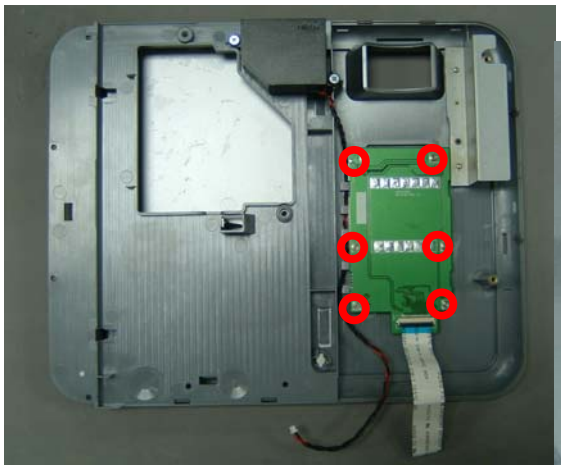


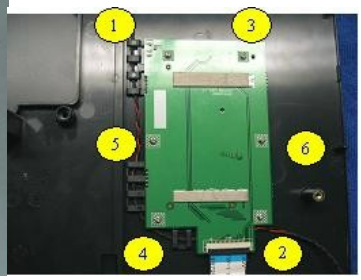
Remove the two screws and take off the top case frame.

Remove these the eight screws.

Loose the two screws. **Then remove the top cover.**

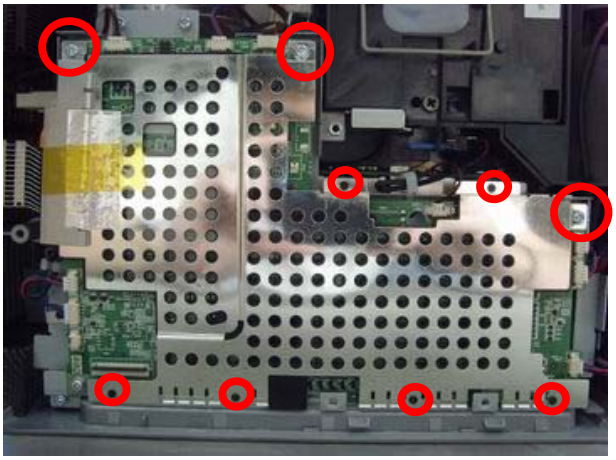
Removing the KeyPad / Front Cover / Main Board



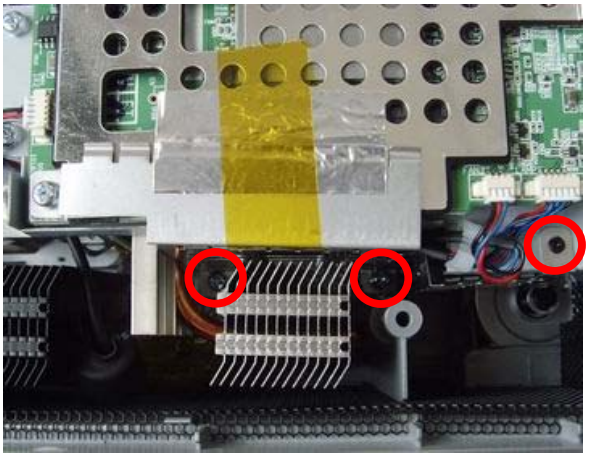


Remove these the six screws.

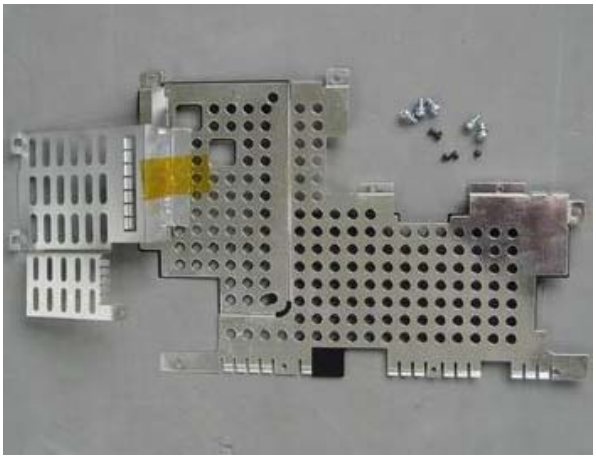
View of the IO Cover.



Remove these the nine screws.



Remove the three screws.



Open the shield.

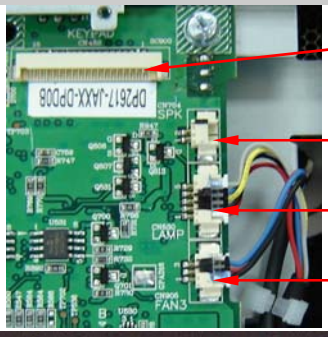
Removing the Main Board & IO Board

Fan4 – CN802

Power – CN900

Fan2 – CN801

Fan1 – CN800

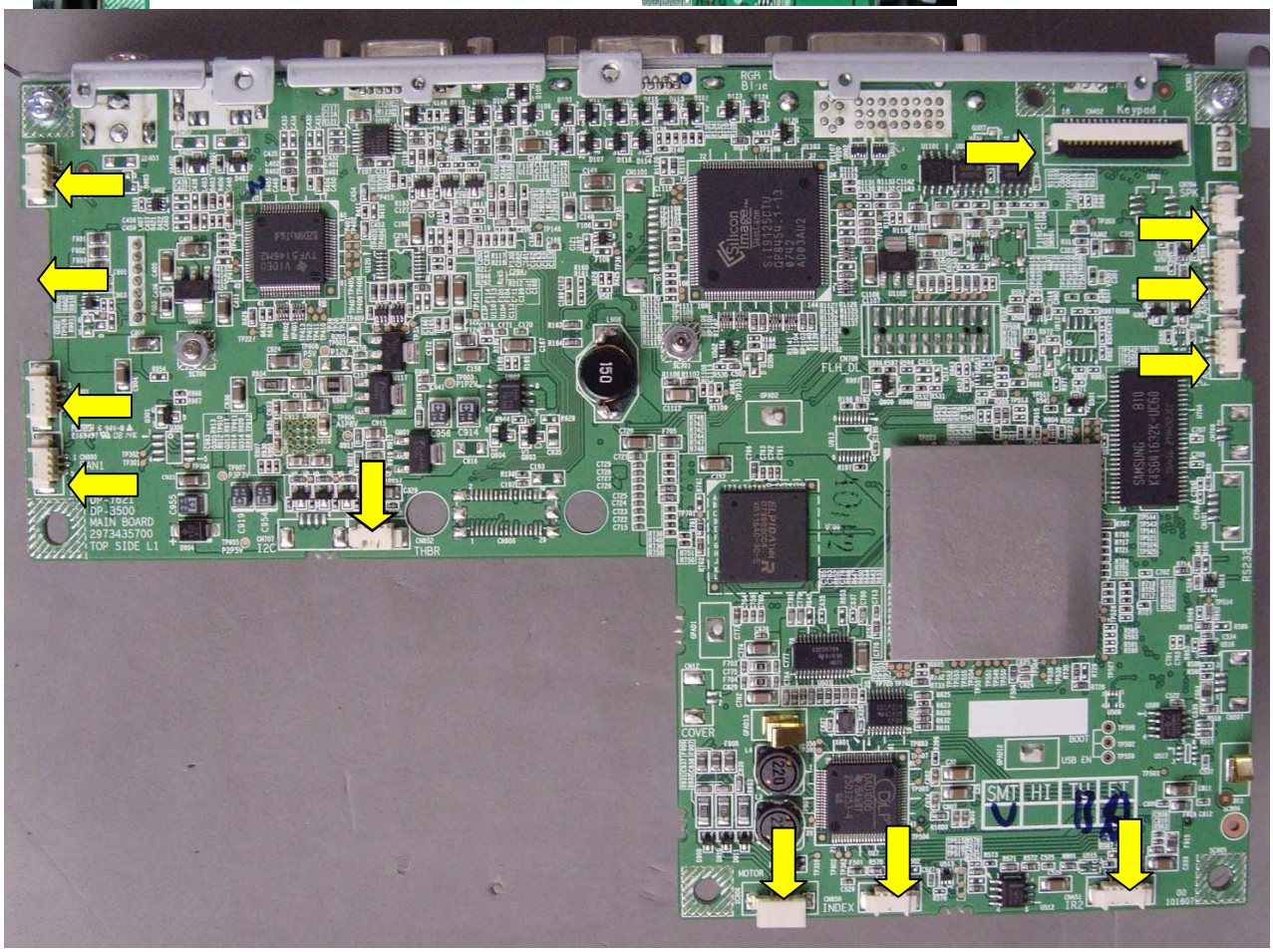


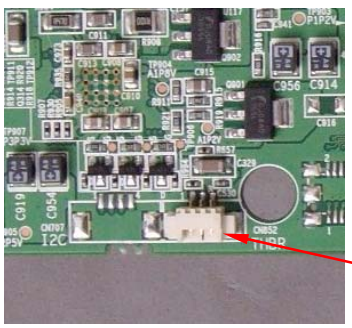
Keypad – CN452

SPK – CN704

LAMP – CN530

Fan3 – CN905



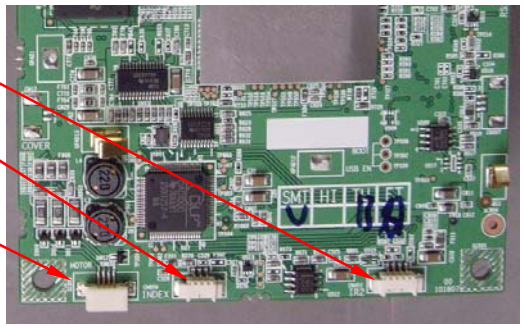


IR2 – CN451

INDEX – CN850

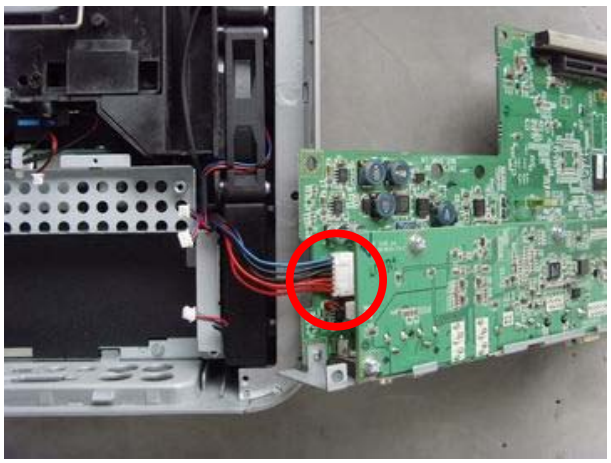
CW – CN650

Thermal – CN852

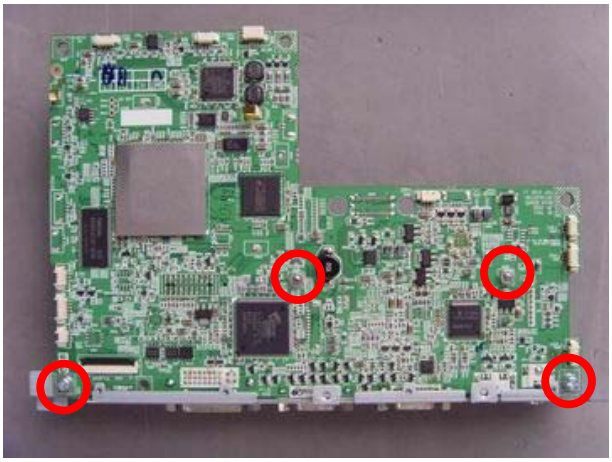


Disassemble the Main Board & IO Board

Remove the two screws.



Disconnect this cable and remove the Main Board & IO Board assy.

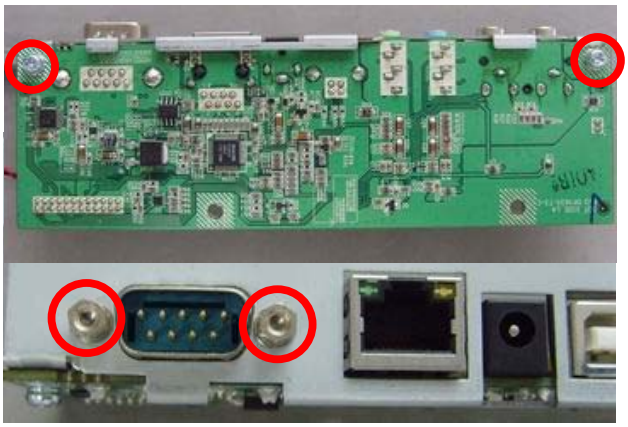


Remove the two screws & nuts.

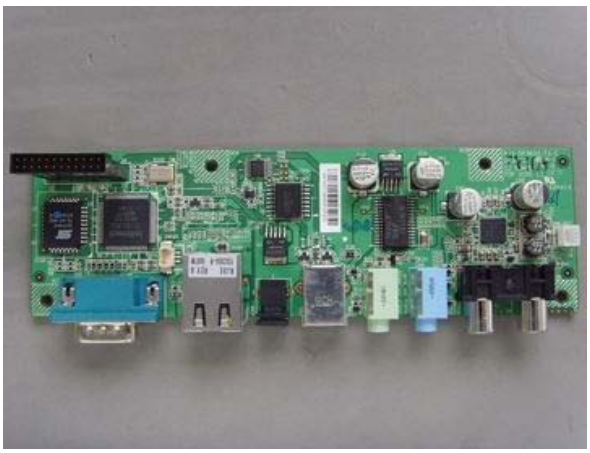
Remove the six hexagonal bolts

The main BD view

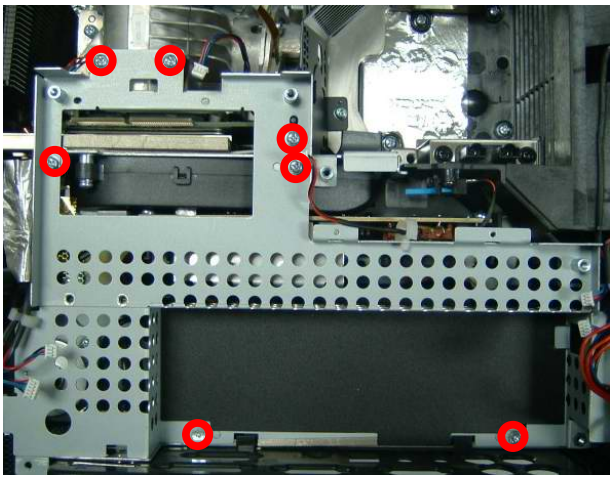
Disassemble the IO Board & bracket



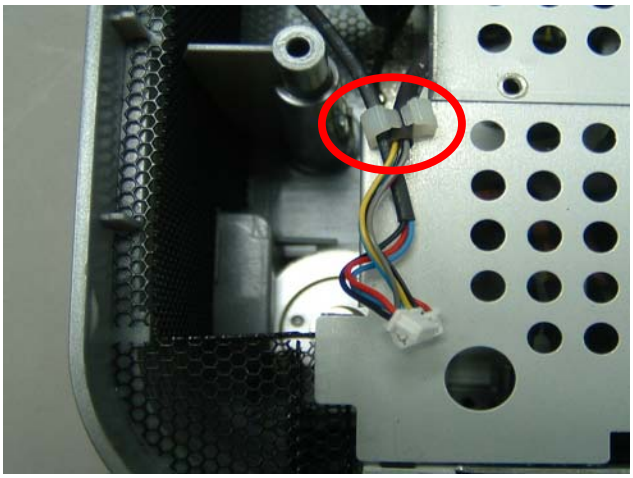
Remove the two screws & hexagonal bolts



Views of the IO BD



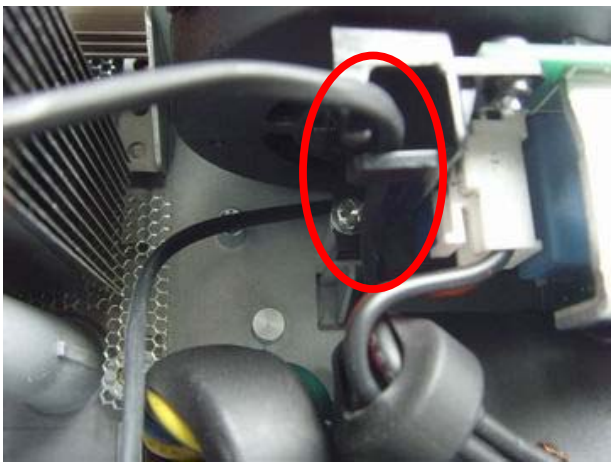
Remove these the seven screws



Check this place when you assemble the cover.

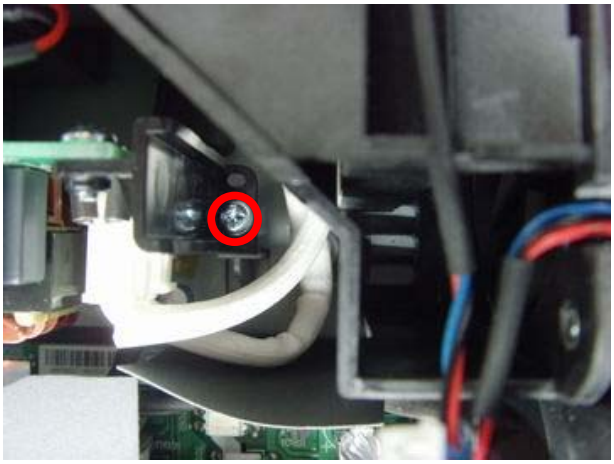
Remove the bracket.

Disassemble the Ballast and Fan Assy.

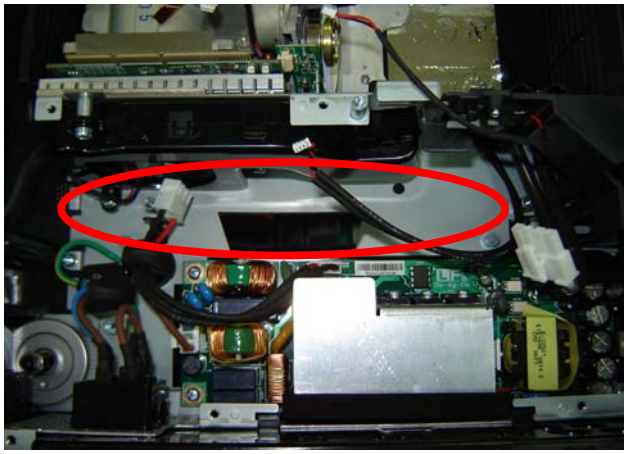


Check this place when you assemble the wire.

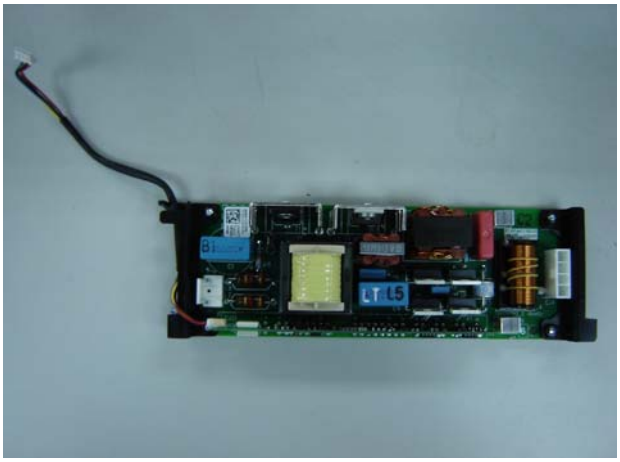
Remove this screw.



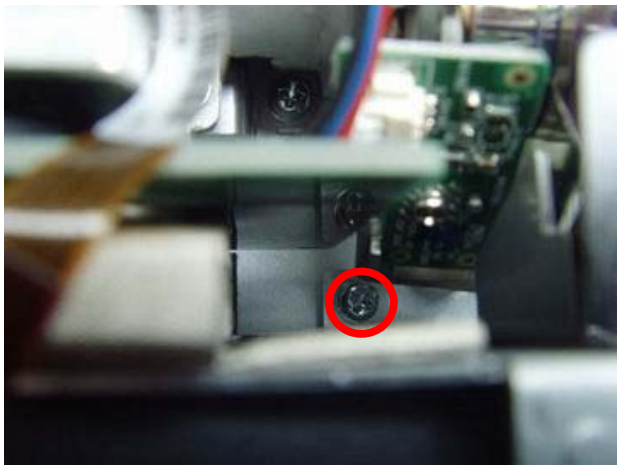
Remove this screw.



Remove the Lamp Driver.

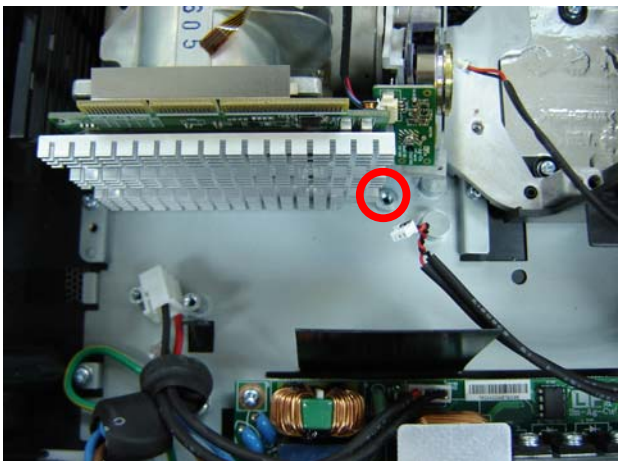


The Lamp Driver.



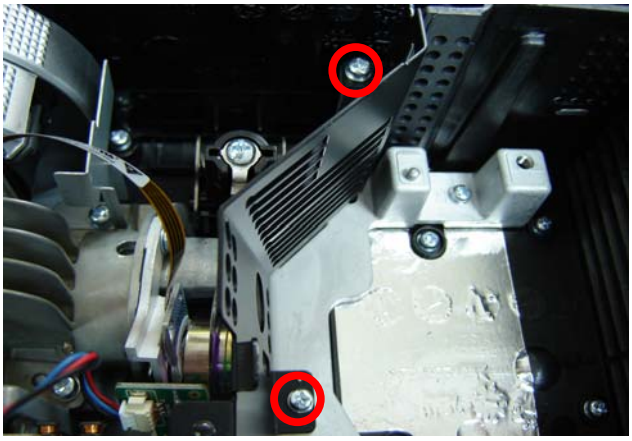
Remove the screws.

Disassemble the Fan and Optic Engine Assy.

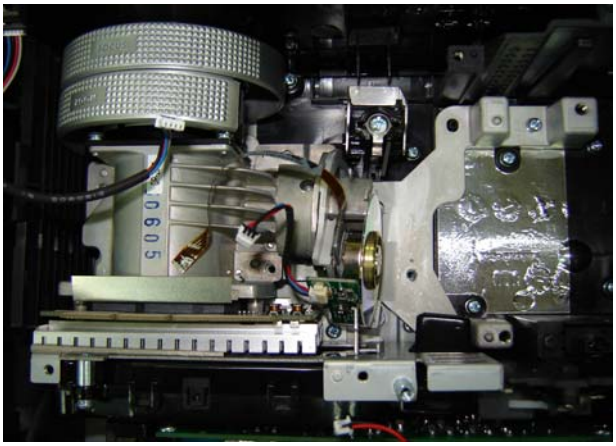


Remove the Fan.

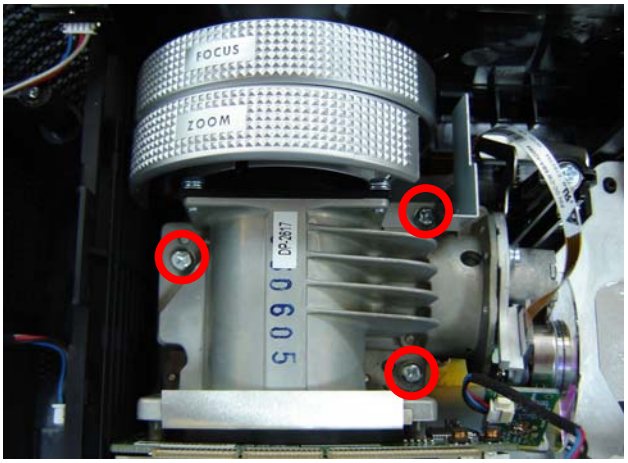
The Fan Module.



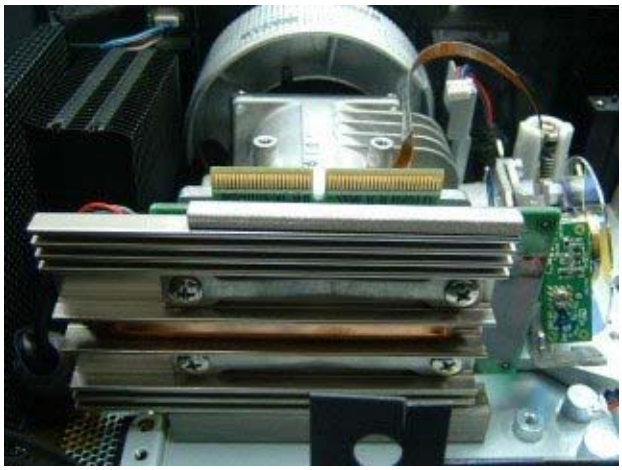
Remove these the two screws.



Take the heat-sink away.

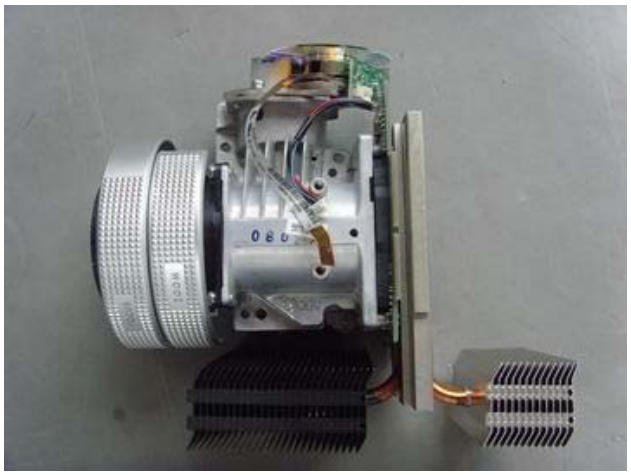


Remove these the three screws.

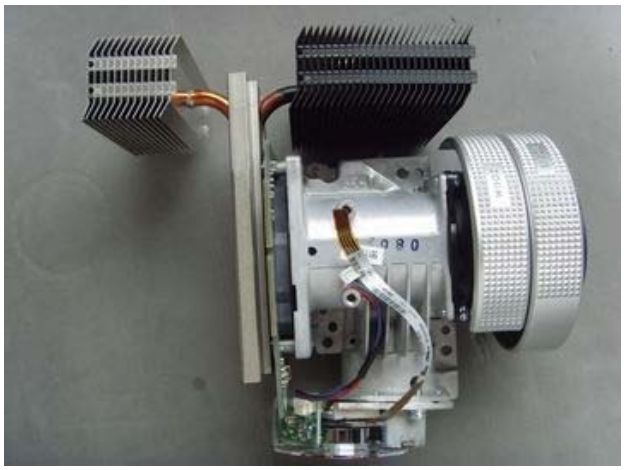


Remove Optic Engine Assy.

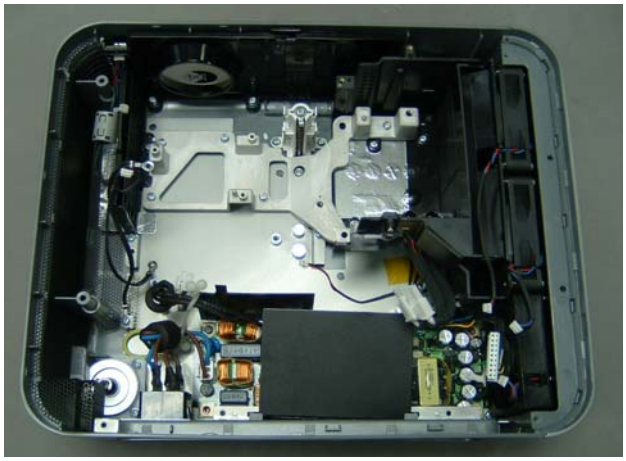
Disassemble the Optic Engine Assy and Power Assy .



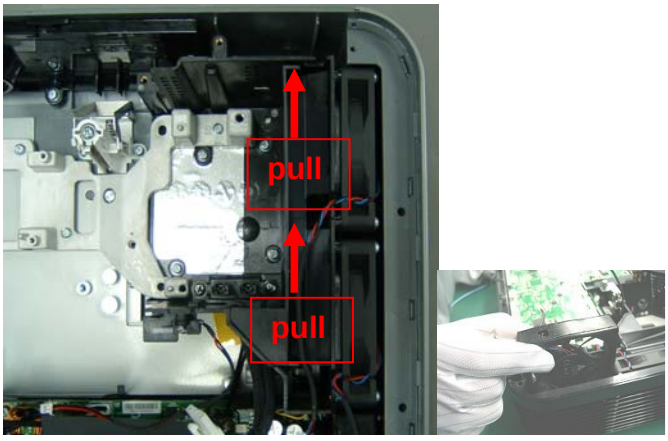
View Optic Engine Assy.



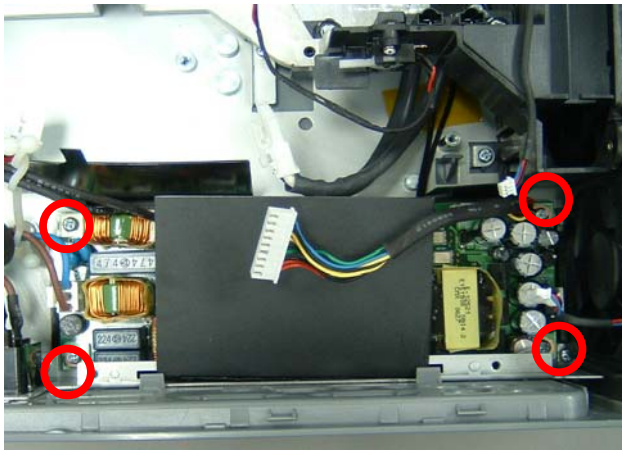
View Optic Engine Assy.



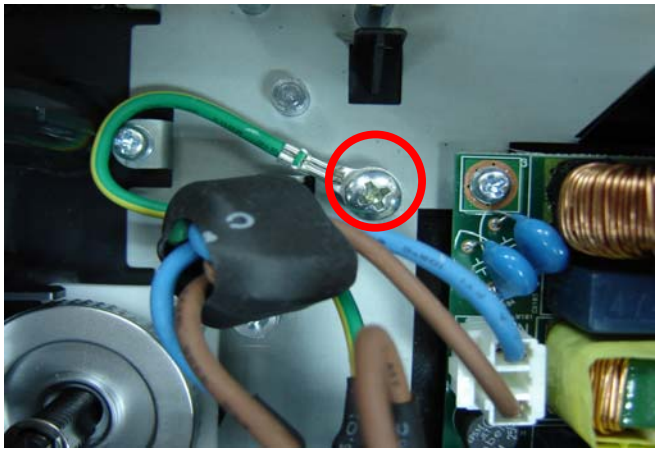
Remove Optic Engine Assy.



Remove the two Fan Assy.



Remove these the four screws.



Check this screw when you assemble the wire.

5. Firmware

5-1 Projector USB Drivers Installation Guide

NOTE:
The user must have administrative privileges on the target computer in order to install your driver. The installation target directory must not write protected.
Attention: This utility is for DDP2000/2030 series projector only.

Ver 5.0

System Requirement

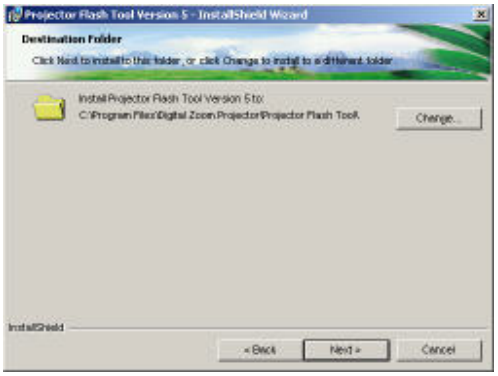
IBM compatible PC.
Windows XP-SP2
Operator may need basic knowledge of Windows device installation.

Install Flash-Tool to PC

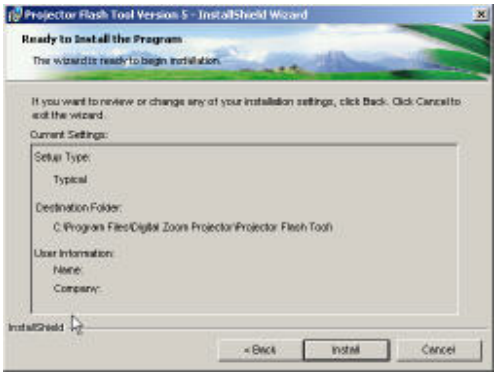
Run the "Digital Zoom Projector Flash Tool Vx.y.msi", it will automatically launch the USB drivers update. Following are the dialogues of the Driver Install process…

Projector Flash Tool Version 5 - InstallShield Wizard
Welcome to the InstallShield Wizard for Projector Flash Tool Version 5
The InstallShield(R) Wizard will install Projector Flash Tool Version 5 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

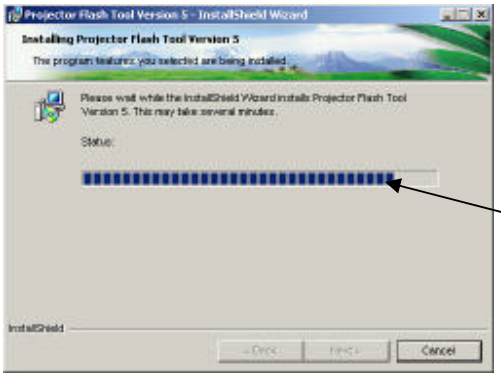
This is the first page of install dialog.


Projector Flash Tool Version 5 - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Projector Flash Tool Version 5 to:
C:\Program Files\Digital Zoom Projector\Projector Flash Tool\
Change...
InstallShield
< Back
Next >
Cancel

This is the driver installation destination dialogue, use "Change" button to override the default directory if you decide to put it into different place.

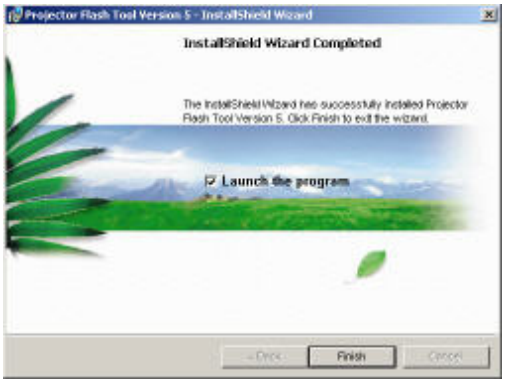


Ready to install the drivers into the PC, press <Install> to start.


Projector Flash Tool Version 5 - InstallShield Wizard
Installing Projector Flash Tool Version 5
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs Projector Flash Tool Version 5. This may take several minutes.
Status:
InstallShield
Cancel

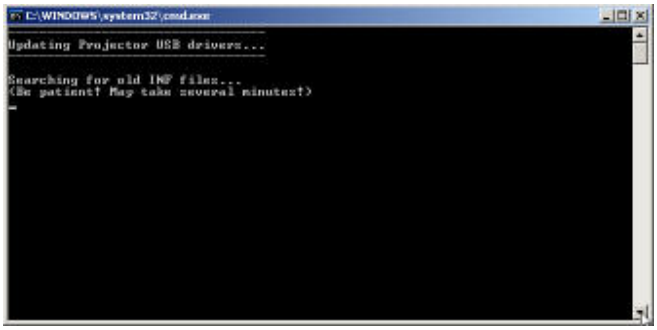
The Installer copies the necessary files to PC.

Launch the driver update

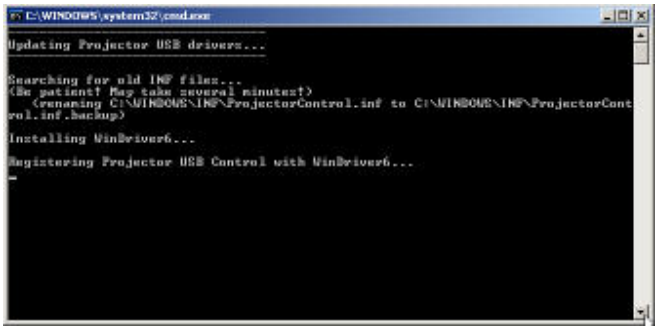

Projector Flash Tool Version 5 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Projector Flash Tool Version 5. Click Finish to exit the wizard.
Launch the program
Finish

Press the <Finish> button with the Launch checkbox checked, the wizard will start the INF update.

Note:
The INF update may take a while depends your computer speed and INF numbers…
Be patient! These windows will automatically close after the updating finished.

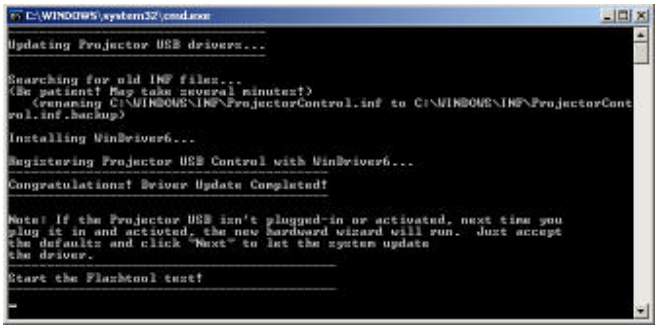

C:\WINDOWS\system32\cmd.exe
Updating Projector USB drivers...
Searching for old INF files...
(Be patient! May take several minutes!)

The install program copy the new INF into Windows directory, it will search the old INF and replace it with the newer one.

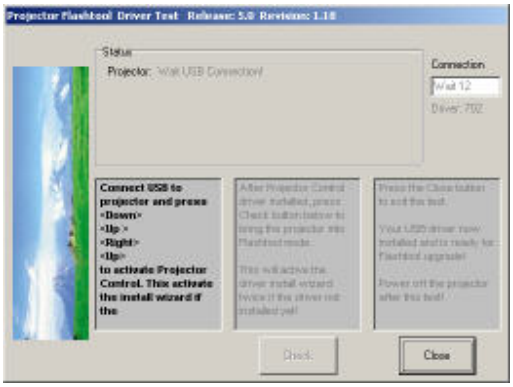


Remove the USB cable between PC and projector if it is connected.

The WinDrive USB drivers will be installed and registered to system.


C:\WINDOWS\system32\cmd.exe
Updating Projector USB drivers...
Searching for old INF files...
(Be patient! May take several minutes!)
(renaming C:\WINDOWS\INF\ProjectorControl.inf to C:\WINDOWS\INF\ProjectorCont
rol.inf.backup)
Installing WinDriver6...
Registering Projector USB Control with WinDriver6...
Congratulations! Driver Update Completed!
Note: If the Projector USB isn't plugged-in or activated, next time you
plug it in and activted, the new hardware wizard will run. Just accept
the defaults and click "Next" to let the system update
the driver.
Start the Flashtool test!

After the driver install, a test application will start automatically with Windows hardware wizard for all necessary USB driver.

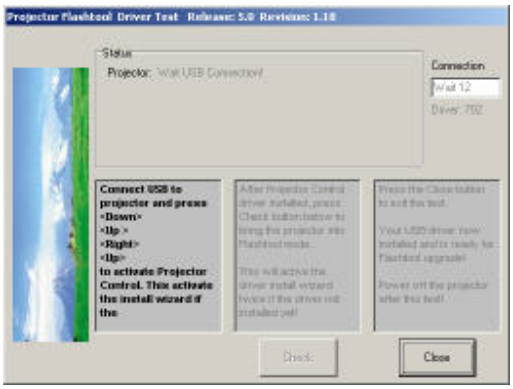

Projector Flashtool Driver Test Release: 5.0 Revision: 1.10
Status
Projector:
Connection
Connect USB to projector and press <Down> <Up> <Right> <Up> to activate Projector Control. This activate the install wizard if the
Check
Close

The driver test launched, wait for the key stroke to enter Projector Control mode…

Connect the USB cable now!

If the driver test application does not launch automatically, run the “Launch FlashToolBL.exe” from installed short cut at

Program> Digital Zoom Projector> projector flashtool version 5> Launch FlasToolBL.exe

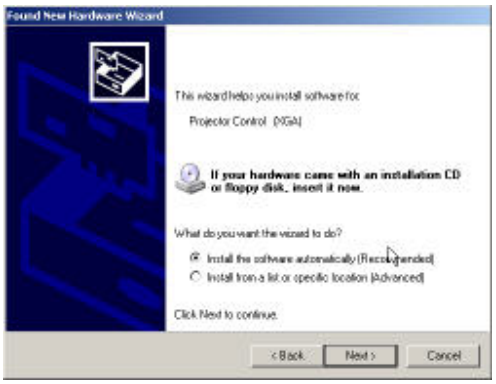

Projector Flashtool Driver Tool - Release: 5.0 Revision: 1.10
Status
Projector: Wait USB Connection!
Connection
Connect USB to projector and press <Down> <Up> <Right> <Up> to activate Projector Control. This activate the install wizard if the
Check
Close

Make sure the USB cable is firmly attached between projector and computer; the power switch is in ON position and projector is in STAND BY mode.

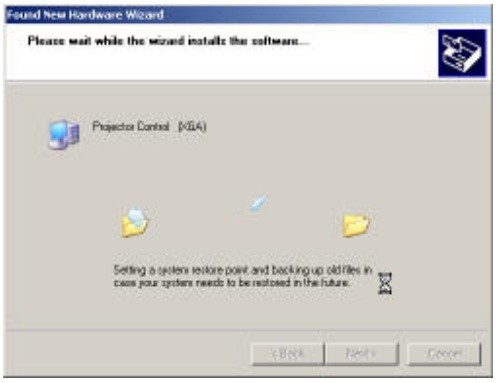
Press **<Down>, <Up>, <Right>, <Up>** key in sequence on keypad (DP16/DP18/DP3622 series) or IR remote controller (DP02 series)。 The power and lamp LED will blink and the Projector Control mode will be enabled.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

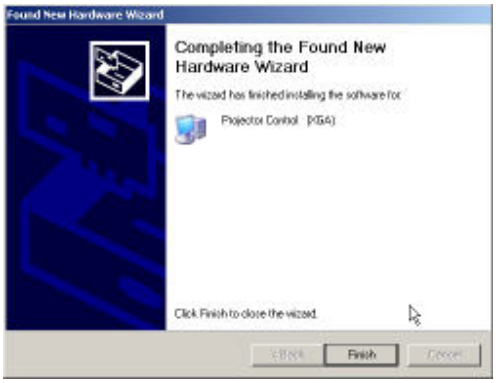
The New Hardware Wizard launched at **the first time** Windows detects a new USB device attached. Use the recommended suggestion usually works all the way in the process. (Select “No, not this time”; Press the Next) (Windows XP-SP2)


Found New Hardware Wizard
This wizard helps you install software for:
Projector Control (XGA)
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

(Press the Next)

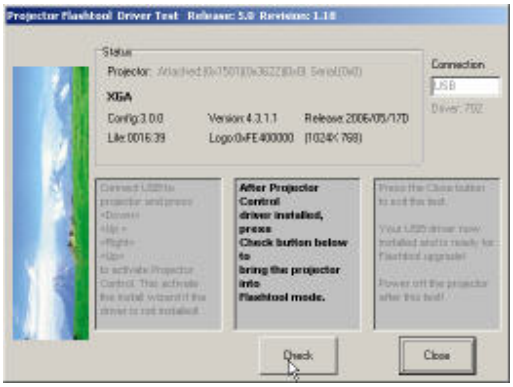

Found New Hardware Wizard
Please wait while the wizard installs the software...
Projector Control (XGA)
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

Windows detected and updating the USB Projector Control driver.

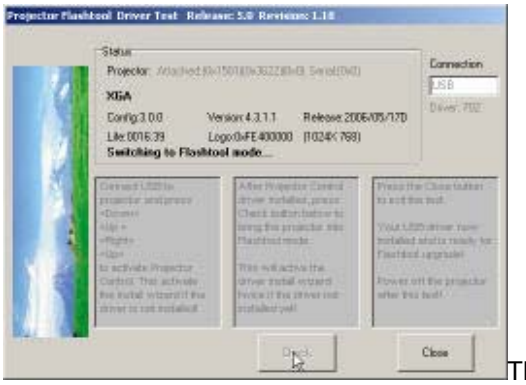

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Projector Control (X5A)
Click Finish to close the wizard.
Finish

Windows completed the new hardware wizard.
Press Finish to end the Wizard.

Note:
In case you got USB enumeration problem, the USB no longer recognize your projector!
Please clear the USB items in the windows registry and install the Flashtool USB driver again.
(Ref: Appendix-A)


Projector Flashtool Driver Test Release: 5.0 Revision: 1.10
Status
Connection
X5A
After Projector Control driver installed, press Check button below to bring the projector into Flashtool mode.
Check
Close

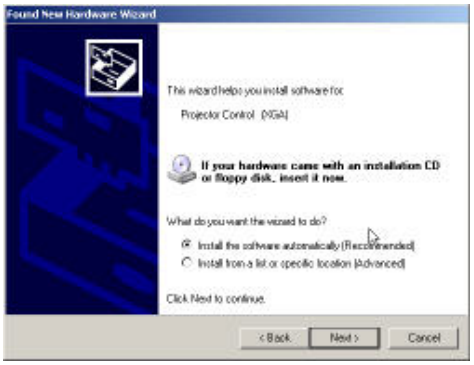
Once the Projector Control USB driver enumerated; the projector information displays in the status pane. Press the <Check> button will drive the projector turns into Flashtool mode. This is verifying that if the projector will switch to Flashtool mode or not!



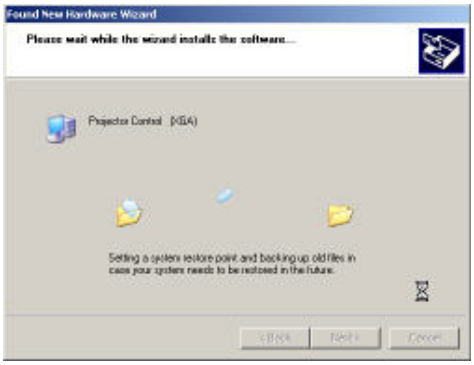
The projector is switching to Flashtool mode after click the <Check>…

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

The Windows New Hardware Wizard will launch again for the second USB Projector Control.
(Select “No, not this time”; Press the Next) (Windows XP-SP2)


Found New Hardware Wizard
This wizard helps you install software for:
Projector Control (XGA)
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

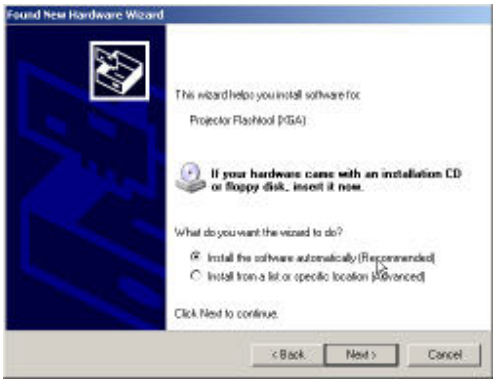
Follow the recommended options and process the driver installation.
(Press the Next)


Found New Hardware Wizard
Please wait while the wizard installs the software...
Projector Control (XGA)
Setting a system restore point and backing up old files in case your system needs to be restored in the future.

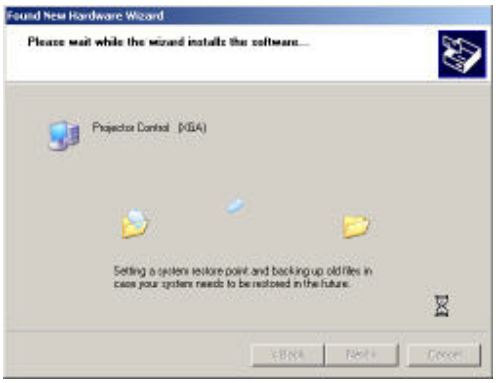
Wizard copies the necessary files and updates the driver.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

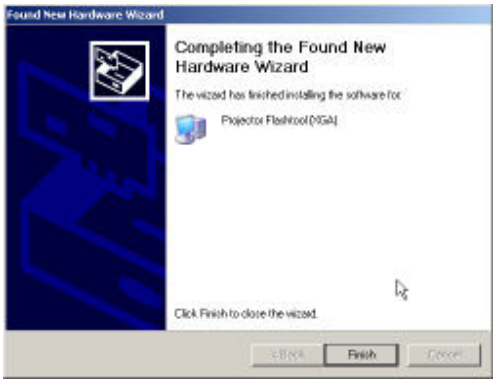
Windows New Hardware Wizard launches for the Projector Flashtool USB device.
(Select “No, not this time”; Press the Next) (Windows XP-SP2)


Found New Hardware Wizard
This wizard helps you install software for:
Projector Flashtool (XGA)
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

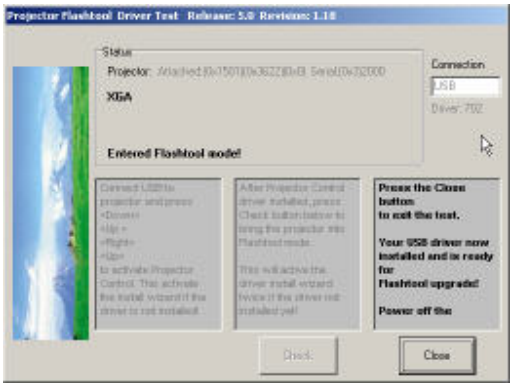
Follow the recommended options and process the driver installation.
(Press the Next)


Found New Hardware Wizard
Please wait while the wizard installs the software...
Projector Control (XGA)
Setting a system restore point and backing up old files in case your system needs to be restored in the future.

Wizard copies the necessary files and updates the driver.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Projector Flashtool (XGA)
Click Finish to close the wizard.
Finish
Cancel

Flashtool USB driver installed.
Press Finish to end the Wizard.



Congratulations! Power off the projector now, your driver has been checked and works for Flashtool.

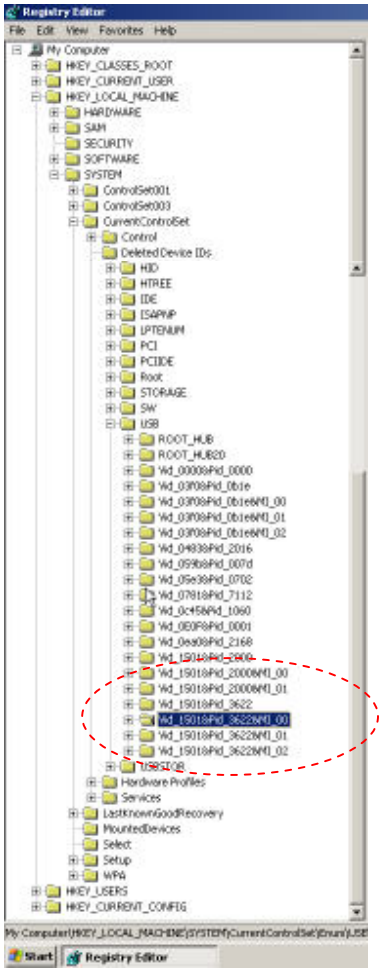
Appendix-A

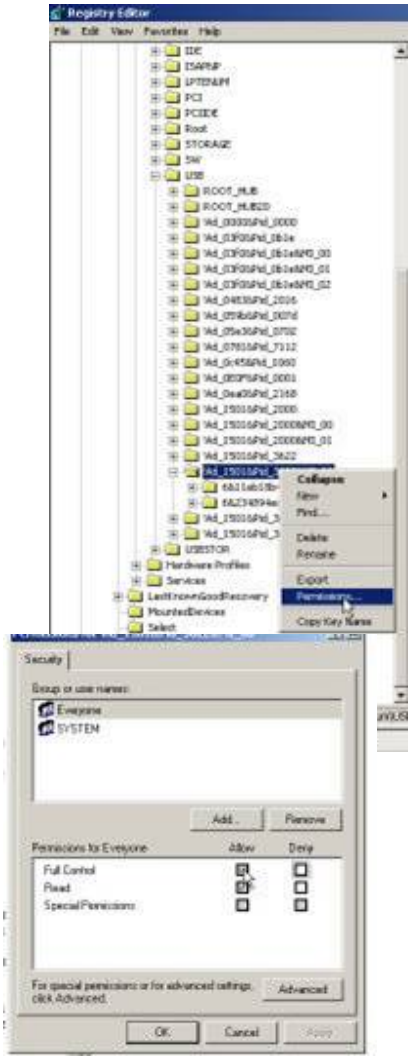
How to clear the USB enumeration registry?

Run “regedit” and select the following items
HKEY_LOCAL_MACHINE->SYSTEM->CurrentControlSet->Enum->USB->

The DP3633 series **VID_1501&Pid_3633xxx**
The DP7626 series **VID_1501&Pid_7626xxx**

Press <Delete> and remove these registries. (You need the read/write privilege of the Windows registry to delete it. Select the item and click right mouse will lead you to the Permissions dialog for applying the security options)

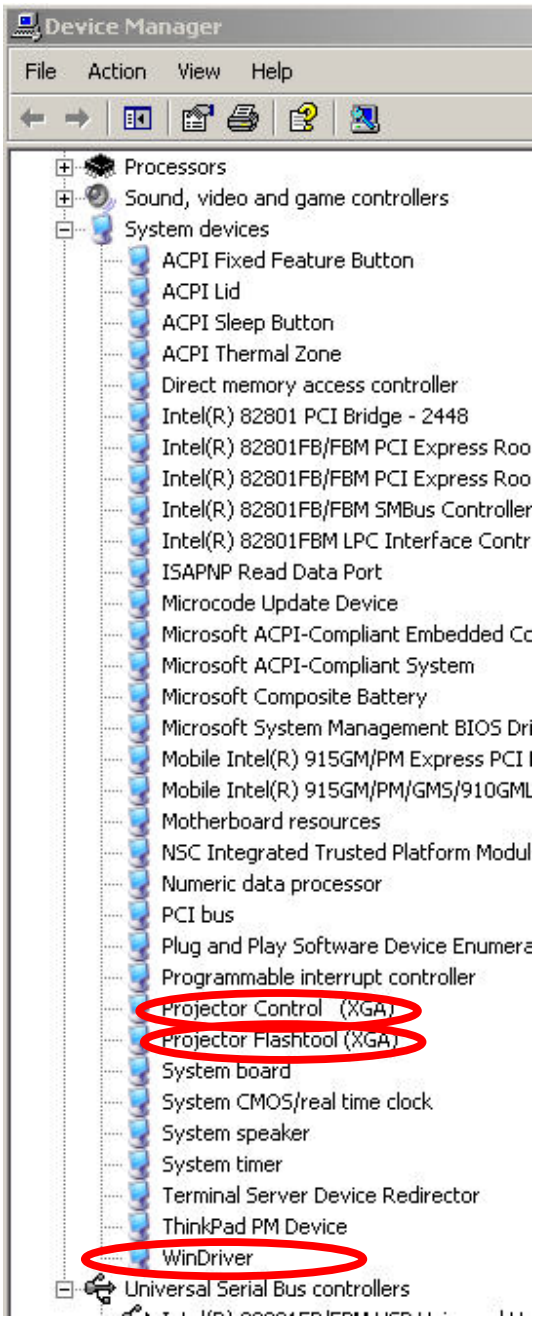




Appendix-B

Projector USB status on Windows Device Manager

The USB HID device will be installed automatically via Windows' USB hot-plug mechanism.



The Projector Control will be dynamically installed after entering the maintenance mode
(Hit key sequence as <down>, <up>, <right>, <up>); The Projector Flashtool will be dynamically installed
when starting the flash upgrading by Flashtool or FlashtoolBL utility.
The WIndriver is the root driver for both Projector Control and Flashtool.

5-2 DLP Projector Flash-Tool (firmware) User Guide

Ver 5.0

NOTE:
The user must have administrative privileges on the target computer in order to install your driver. The installation target directory must not write protected.

Attention: This utility is for DLP DDP2000/3020 series projector only.

System Requirement:

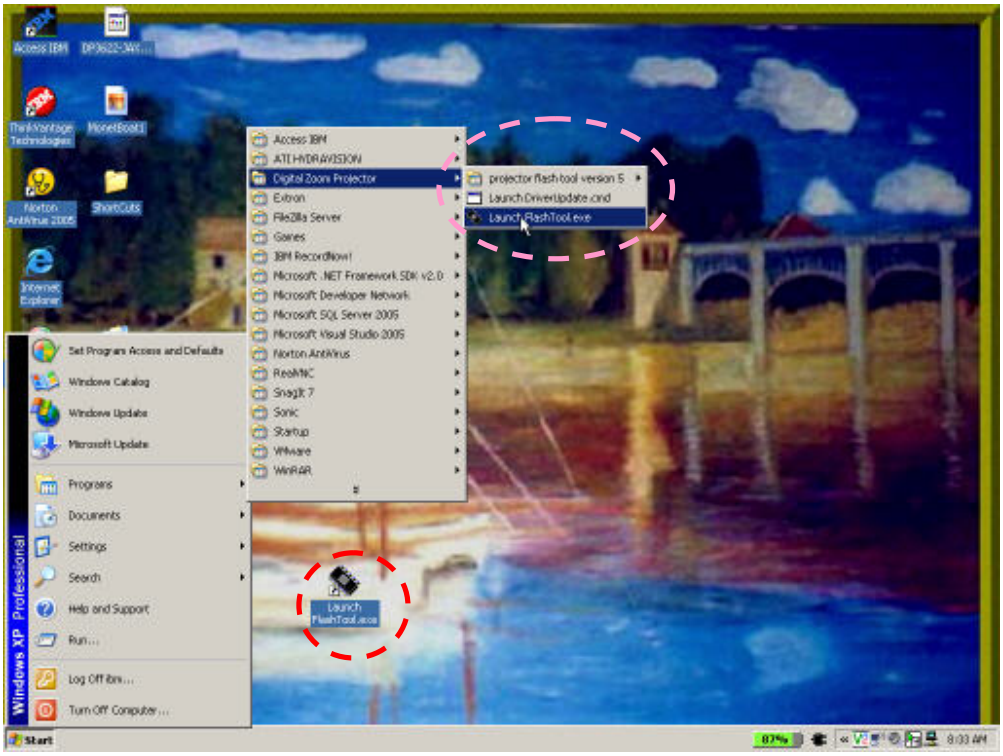
. IBM compatible PC.
. Windows XP operating system (English).
. Operator must have basic knowledge of Windows device installation.
. Projector Flashtool USB driver installed.

Install Flash-Tool to PC

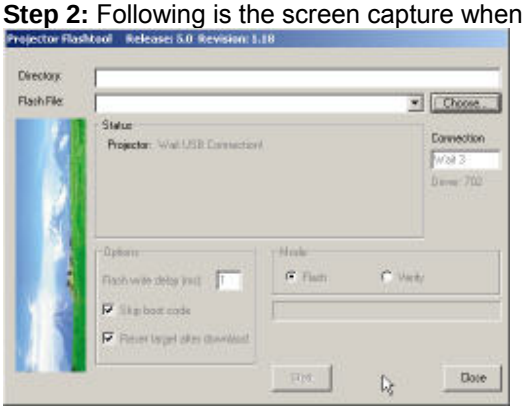
Run the "Digital Zoom Projector Flash Tool Vx.y.msi", if your projector USB drivers not installed yet! Check the USB driver installation guide about the how-to.

Flash-Tool User's Guide (upgrading projector firmware)

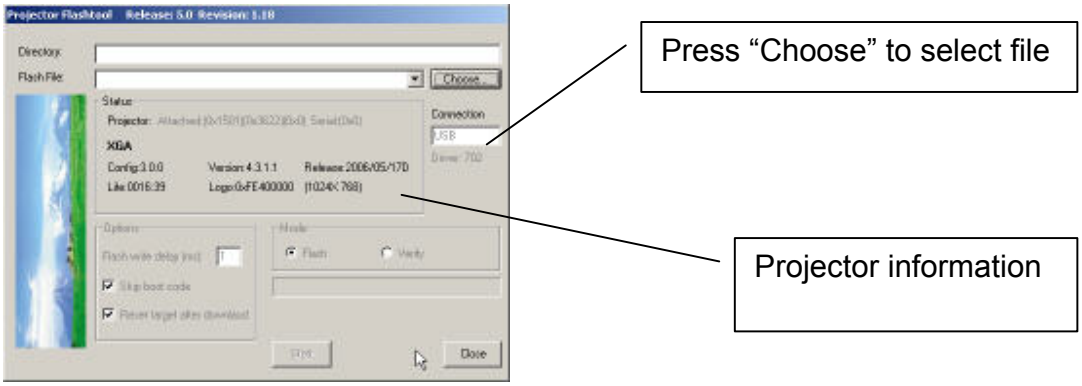
Step 1: Launch the "FlashTool.exe" from installed short-cut at
Program > Digital Zoom Projector> Launch FlasTool.exe or click the "Lauch FlashTool.exe" shortcut icon on the desktop.



Step 2: Following is the screen capture when there is no projector connected.

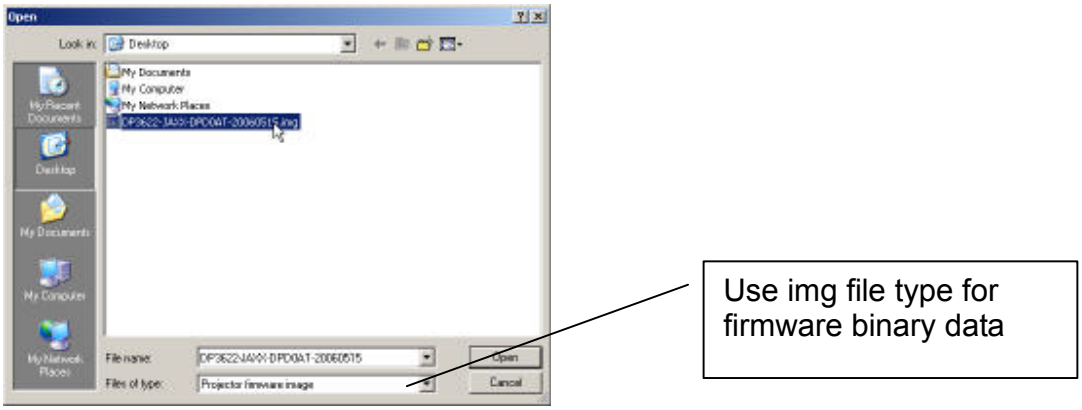


Step 3: **Make sure the USB cable is firmly attached between projector and computer; the power switch is in ON position (if the projector got hardware power switch) and projector is in STAND BY mode.**
Press **<Down>, <Up>, <Right>, <Up>** key in sequence on keypad (DP2601/2618/3618 series) or IR remote controller (DP3602 series)。 The power and lamp LED will blink and the Flash-Tool mode will be enabled.

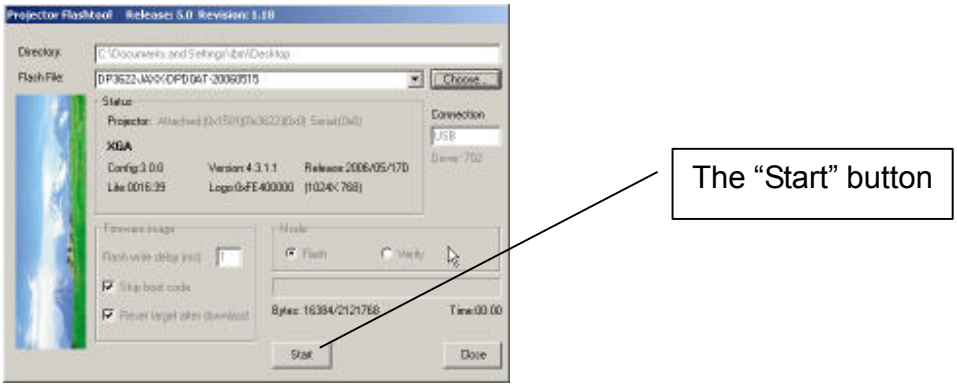


Note:
The Windows hardware wizard will pop up if the USB device driver is not installed. Just select the recommended options and let Windows Wizard do it automatically…

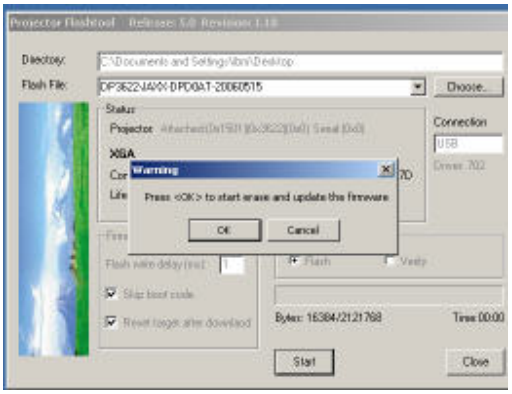
Step 4: Press “Choose” button to locate the new firmware which can be downloaded from websit
e (for example: DP3635-JAXX-DPD0A.img). Select the candidate .img file and either double click it or press the “Open” button to load the file.



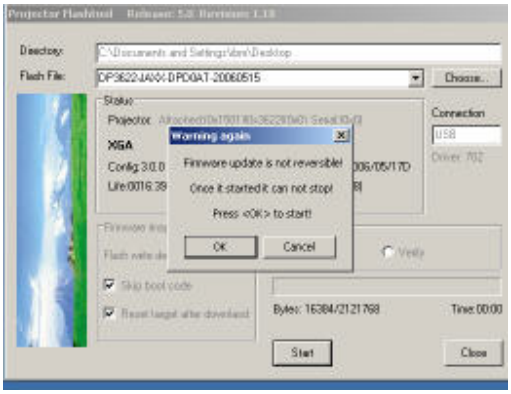
Step 4-1:.The Flashtool will validate the signature of the binary image file for upgrading. The “Start” button will not enable if the binary image is not a valid projector firmware.



Step 5: Press “Start” button to start flash the firmware into projector, the warning message box will appear to get your confirmation. Press <OK> to continue.

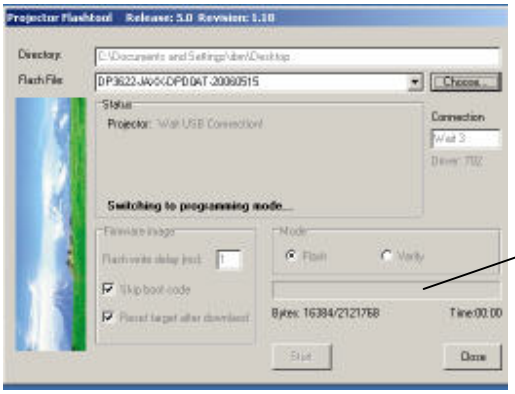


Step 6: The last warning message box appears, this is the last chance to stop the update, press “OK” button to start the firmware update.



Caution:
DO NOT install any USB driver when erasing or upgrading process started.

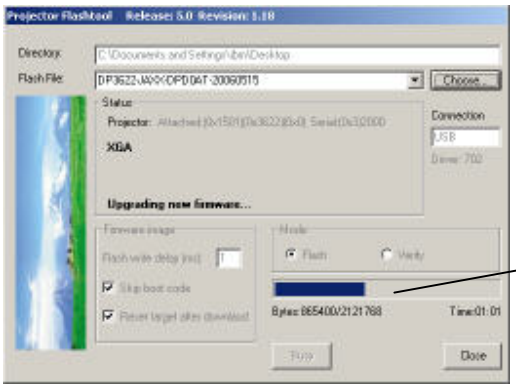
Step 7: By the Flash technology, the old firmware needs to be erased first. Flash-Tool will automatically erase the old firmware before upgrading.



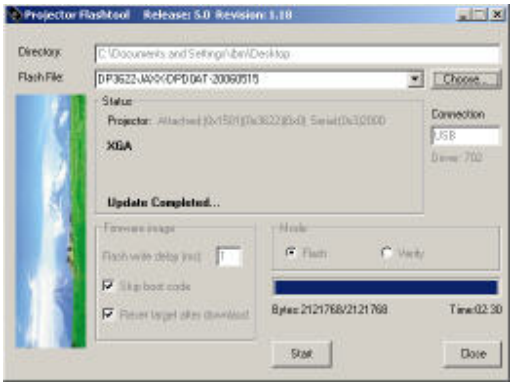
Erasing status

Caution:
DO NOT install any USB driver when erasing or upgrading process started.

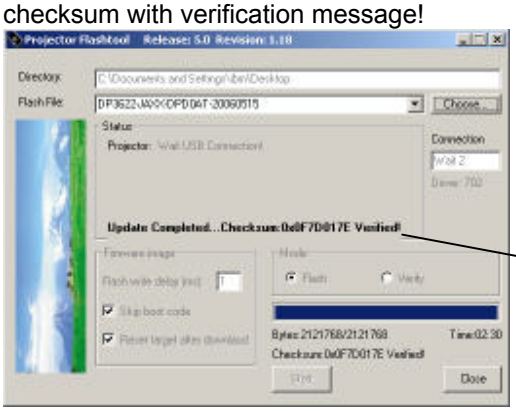
Step 8: After old firmware erased, the new firmware upgrading process will start.



Upgrading new firmware



Step 9: After the new firmware upgraded, the Flash-Tool will perform the final validation. The dialog showed checksum with verification message!



Step 10: Done! Power off the projector.

5-3 DLP Projector Flash-Tool (splash logo) User Guide

NOTE:
The user must have administrative privileges on the target computer in order to install your driver. The installation target directory must not write protected.

Attention: This utility is for DLP DDP2000/3020 series projector only.

Ver 5.0

System Requirement:

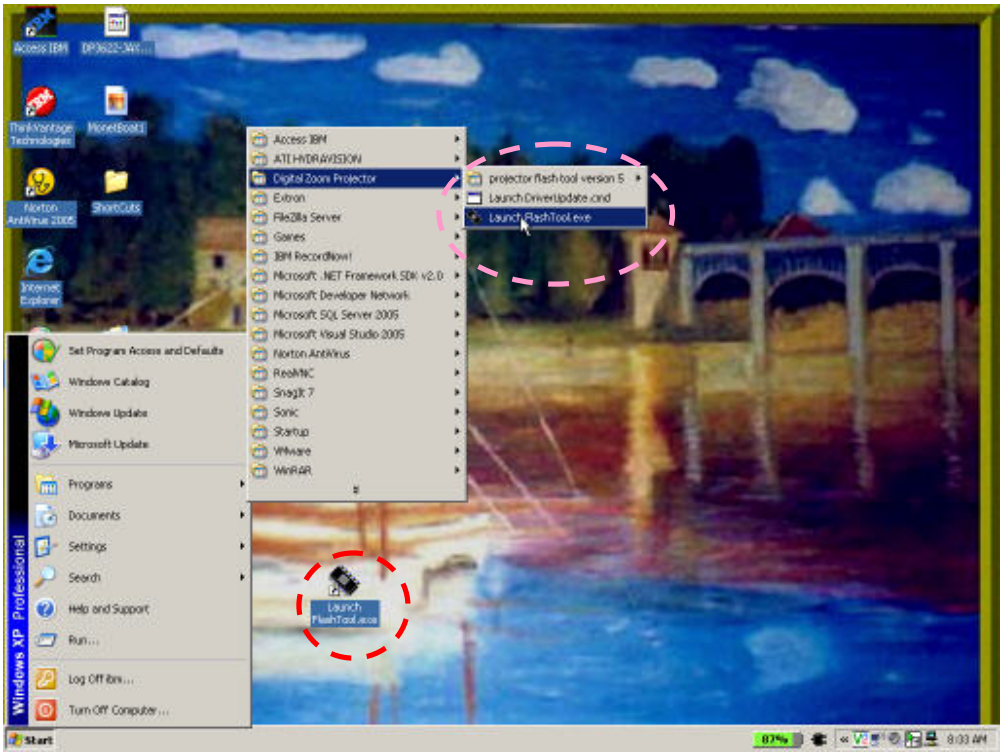
. IBM compatible PC.
. Windows XP operating system (English).
. Operator must have basic knowledge of Windows device installation.
. Projector Flashtool USB driver installed.

Install Flash-Tool to PC

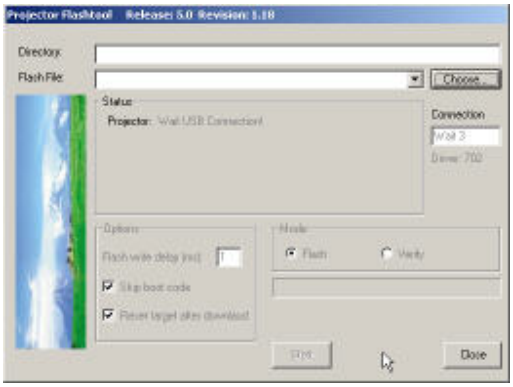
Run the "Digital Zoom Projector Flash Tool Vx.y.msi", if your projector USB drivers are not installed yet! Check the USB driver installation guide about the how-to.

Flash-Tool User's Guide (upgrading projector logo)

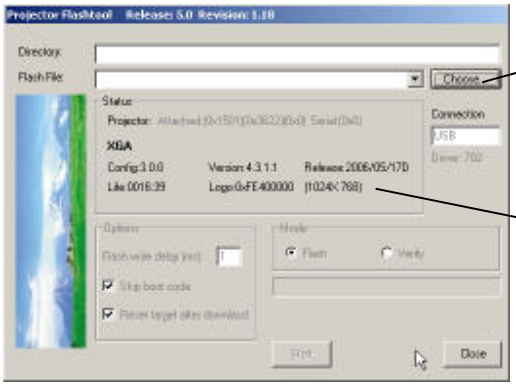
Step 1: Launch the "FlashTool.exe" from installed short-cut at **Program > Digital Zoom Projector> Launch FlasTool.exe** or click the "Lauch FlashTool.exe" shortcut icon on the desktop.



Step 2: Following is the screen capture when there is no projector connected.

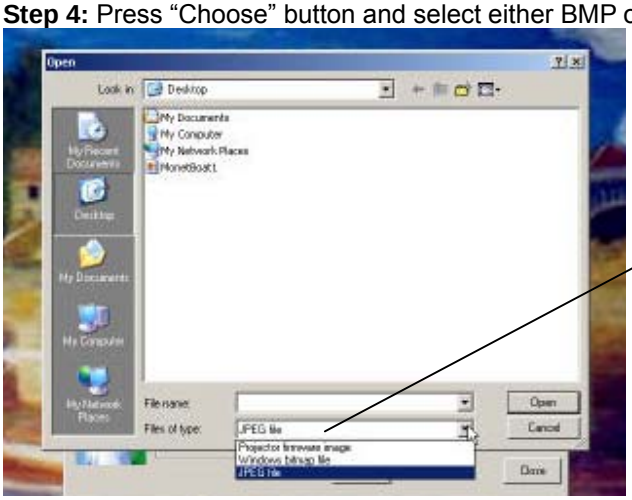


Step 3: **Make sure the USB cable is firmly attached between projector and computer; the power switch is in ON position (if the projector got hardware power switch) and projector is in STAND BY mode.**
Press **<Down>, <Up>, <Right>, <Up>** key in sequence on keypad (DP2601/2618/3618 series) or IR remote controller (DP3602 series)。 The power and lamp LED will blink and the Flash-Tool mode will be enabled.

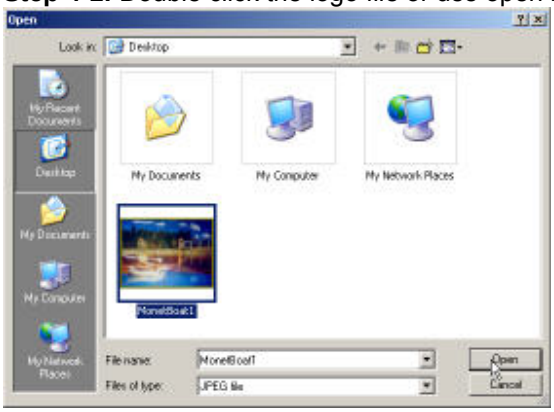


Note:
The Windows hardware wizard will pop up if the USB device driver is not installed. Just select the recommended options and let Windows Wizard do it automatically…

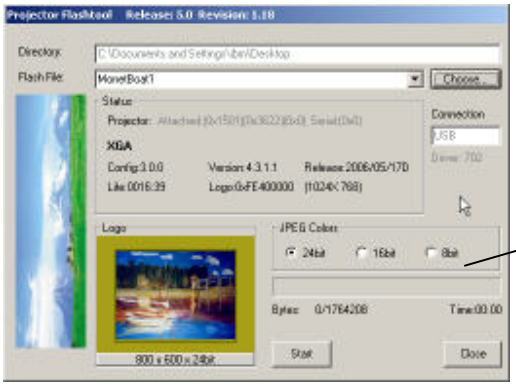
Step 4: Press “Choose” button and select either BMP or JPG in the “File of type” option.



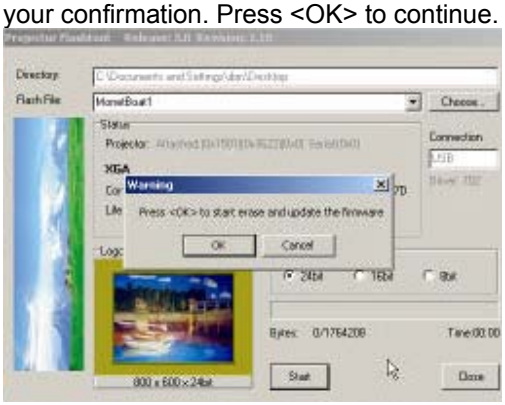
Step 4-1: Double click the logo file or use open button to select the logo you want.



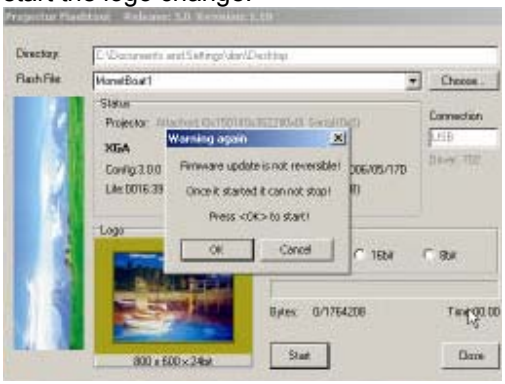
Step 4-2:.The Flashtool will validate the size of the logo file. Logo will be converted to RLE format and stored to the projector’s flash memory. The compressed RLE size can not exceed the flash memory limitation. In case of the size problem, try to reduce the colors by select the JPEG colors option in the tool. (Valid only for JPEG files)



Step 5: Press “Start” button to start flash the firmware into projector, the warning message box will appear to get your confirmation. Press <OK> to continue.

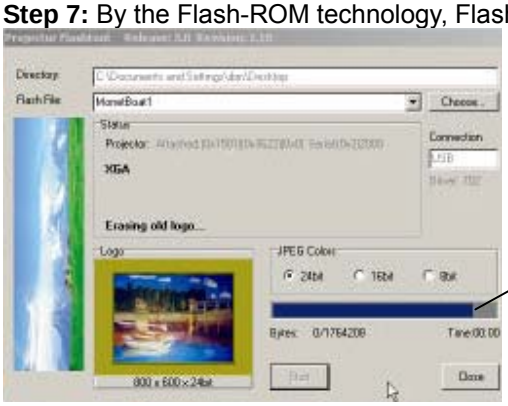


Step 6: The last warning message box appears, this is the last chance to cancel the update, press “OK” button to start the logo change.



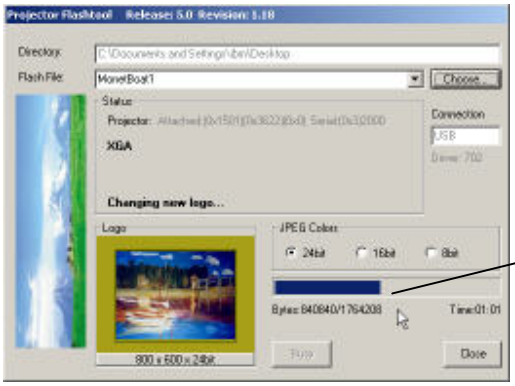
Caution:
DO NOT install any USB driver when erasing or upgrading process started.

Step 7: By the Flash-ROM technology, Flash-Tool need to erase the old logo data before it can change it.

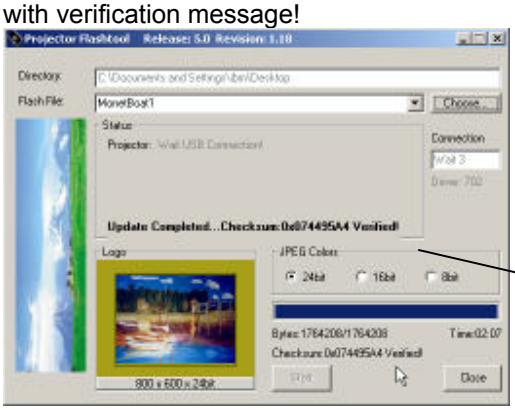


Caution:
DO NOT install any USB driver when erasing or upgrading process started

Step 8: After old logo erased, the new logo upgrading process will start.



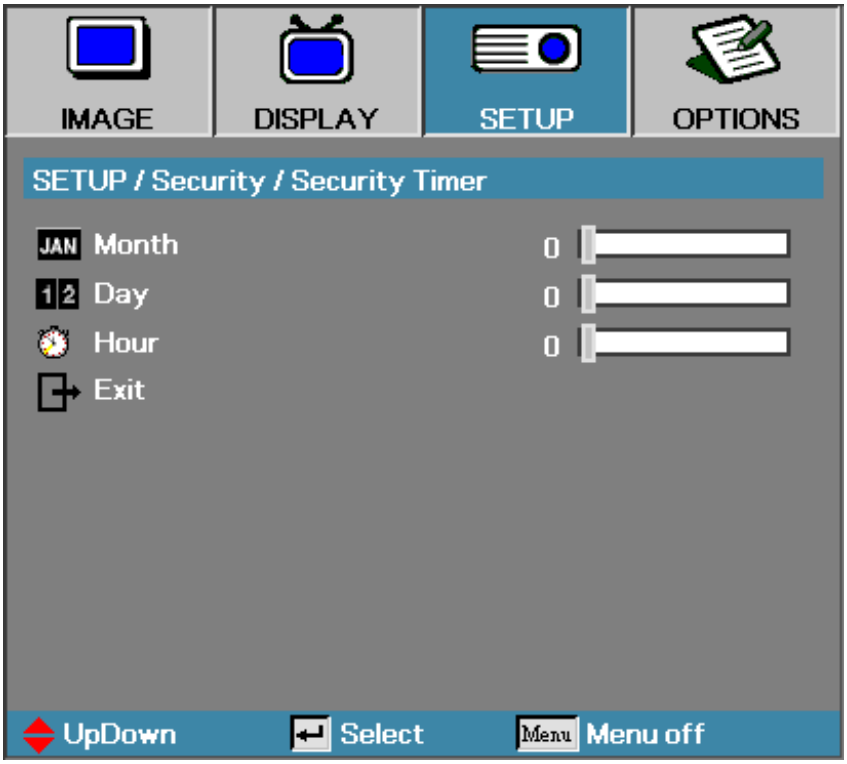
Step 9: After the new logo changed, the Flash-Tool will perform the final validation. The dialog showed checksum with verification message!



Step 10: Done! Power off the projector.

5-4.Security Timer

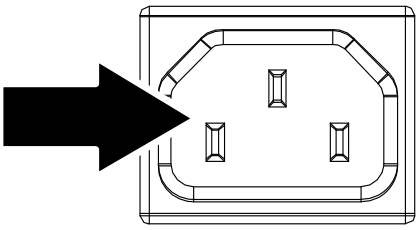
Press the **Menu** button to open the OSD menu. Press ◄► to move to the **SETUP** menu. Press ▲▼ to move up and down and select **Security**. Press ▲▼ to move up and down and select **Security Timer**. Press **Enter** to open the **Security Timer** submenu. Press ◄► to change values for settings, and then press **Enter** to confirm the new setting.



ITEM	DESCRIPTION	DEFAULT
Month	**Set the number of months the projector can be used.**	**0**
Day	**Set the number of days for the projector to be active.**	**0**
Hour	**Set the number of hours for the projector to be active.**	**0**

5-5.Starting and Shutting down the Projector

1. Connect the power cord to the projector.

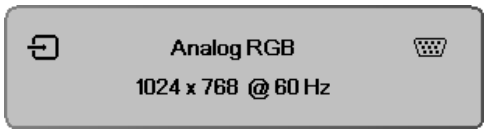


2. Turn On the connected devices.

3. Ensure the Power LED is steady (flashing) and then press the Power button to turn On the projector.

The projector splash screen displays and connected devices are detected. If the connected device is a PC, press the appropriate keys on the computer keyboard to switch the display output to the projector. (Check the user manual of the PC to determine the appropriate Fn key combination to change display output.)

4. If more than one input device is connected, press the **Source** button repeatedly to switch among devices. (DVD and HDTV are supported through the VGA connector)



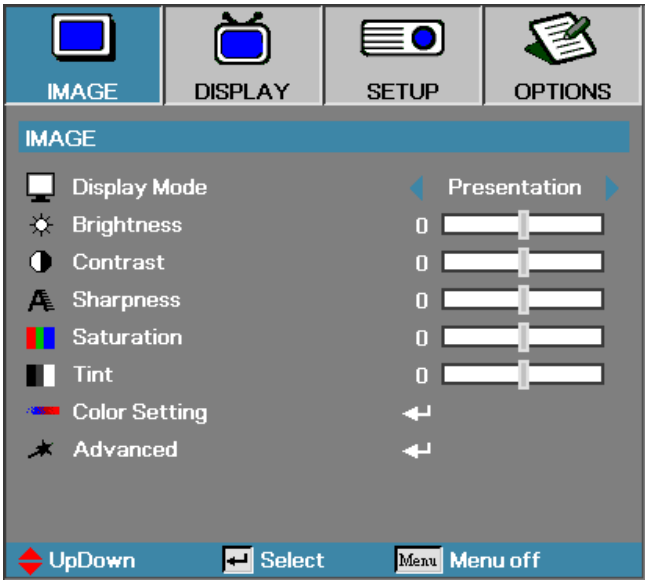
5. To turn off the projector, press the power button. The **Power Off? / Press Power again** message appears. Press the **Power** button again to turn off the projector.

Caution:
Do not unplug the power cord until the Lamp LED (on Cooling mode) stops flashing–indicating the projector has cooled down.

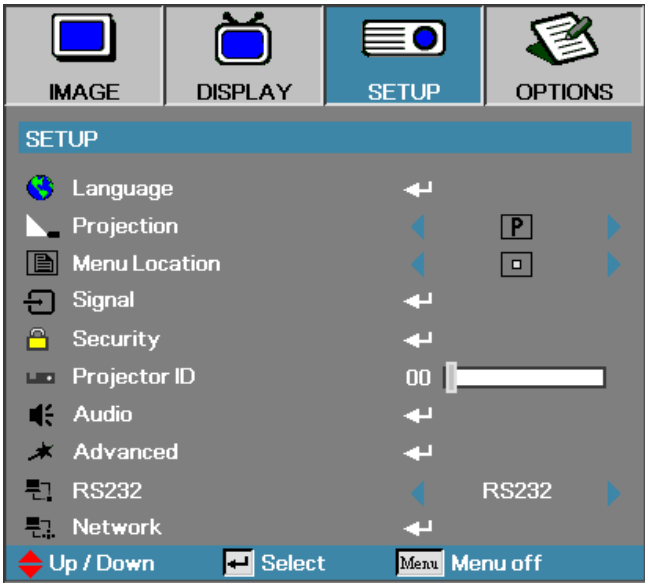
5-6.Setting an Access Password (Security Lock)

You can use the Remote digital buttons to set a password and prevent unauthorized use of the projector. When enabled, the password must be entered after you power on the projector. Keep the password in a safe place. Without the password, you will not be able to use the projector. If you lose the password, contact your reseller for information on clearing the password.

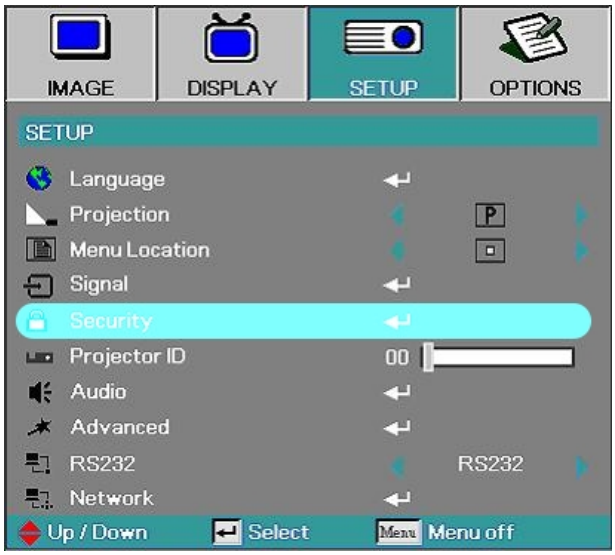
1. Press the **Menu** button to open the OSD menu.



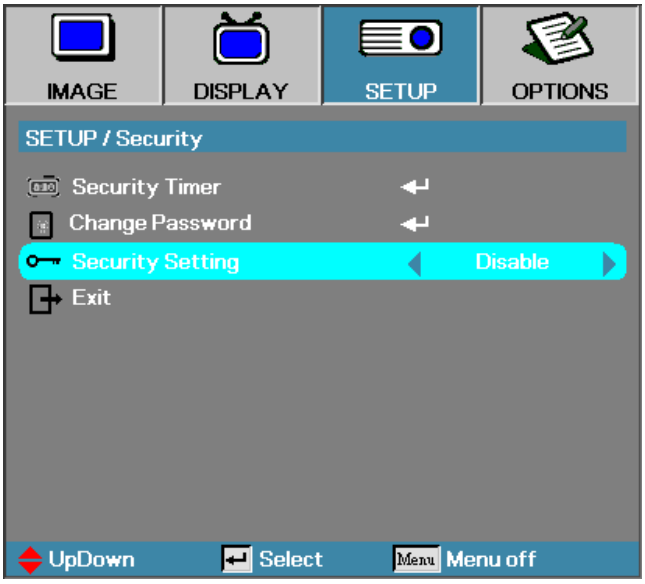
2. Press ◄► to move to the **SETUP** menu.



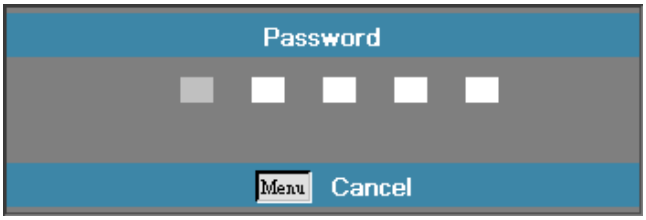
3. Select the **Security** and then press Enter to enter to the Sub-Menu.



4. Press ▲▼ to select **Security Setting** and then press ◄► to select **Enable/Disable**.

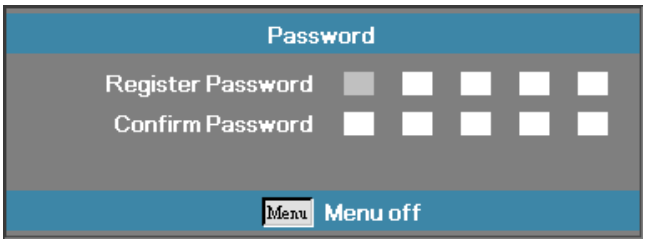


5. When the security setting is Enabled, you are prompted to enter a password soon after the projector is powered on.
   Note: If the incorrect password is entered three times the projector auto shutdowns down after 10 seconds.
   The default password is: <1> <2> <3> <4> <5>.



6. To change a password, enter the previous password when prompted.

   Use the following keys <1>, <2>, <3>, <4>, <5>, <6>, <7>, <8>, <9> to define a new password.



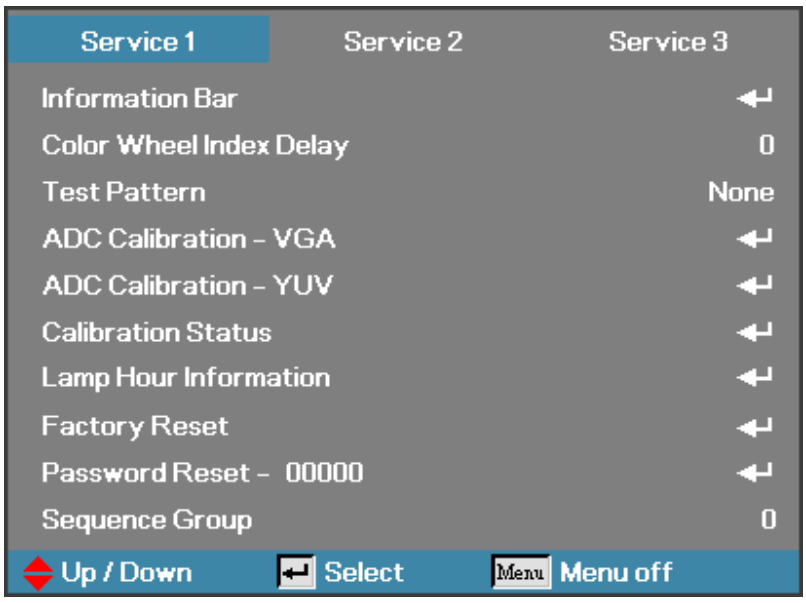
6. Calibration

Step of into Service Mode

Step 1: To turn on the projector, press the Power button on the keypad or IR controller,
. Until the **“Power Off? Press Power again”** message appears.

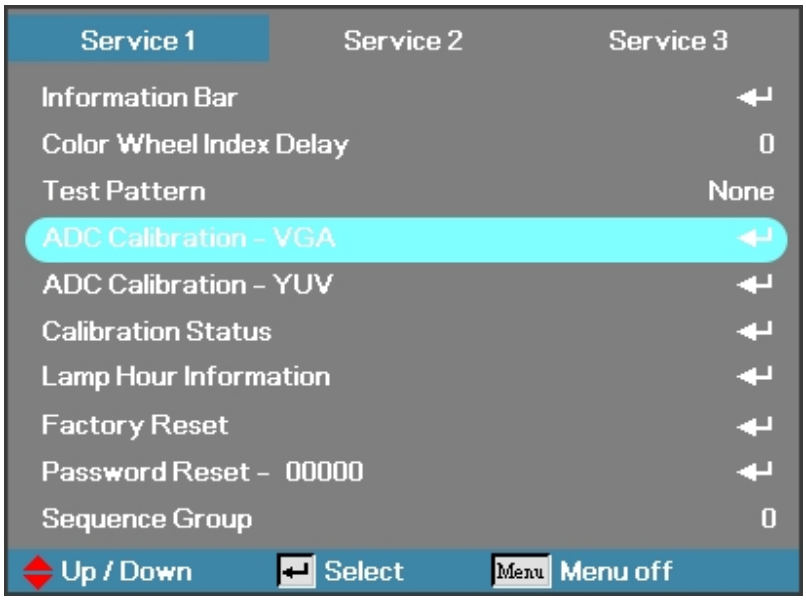
Step 2：Then press “Left”=>“Right”=>“Down”=>“Up” button on the keypad or IR controller.

Step 3：If password is correct then go into Service Mode.

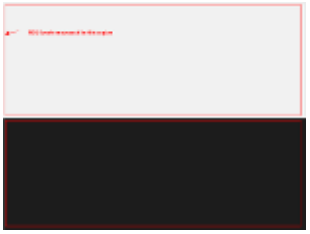


6-1. Calibrate Analog RGB (EP774: 1024 x 768 @ 60Hz & EW674:1280x800@60Hz):

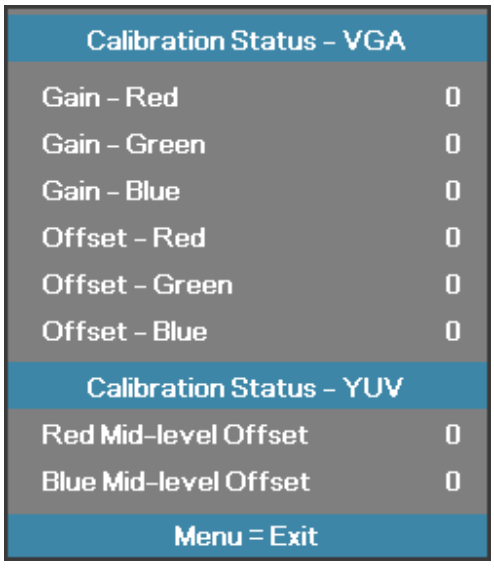
Step 1: In Service 1Mode select ADC Calibration - VGA In this menu input pattern with White (240,240,240) and Black (16,16,16) for calibrate VGA Source. After input ready press “Enter” key to calibration.



Input Pattern



Step 2: After complete the OSD will show the picture as follow, if not complete, just close the OSD.



Note: Offset & Gain Value

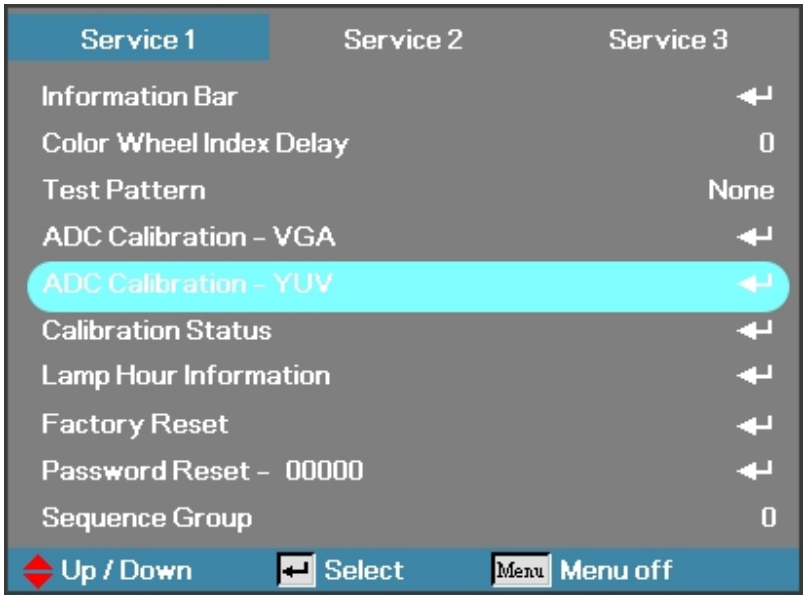
	Default	After ADC
Offset	**511**	
Gain	**511**	

Step 3: Compare internal white pattern and RGB source white pattern, if the brightness gap ratio of these two source is bigger than 3.5%.

6-2. Calibrate Analog YUV

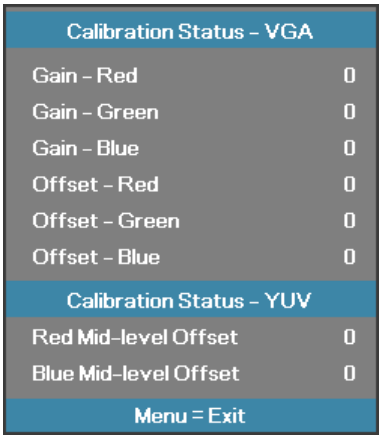
Equipment: VG828, must be take off H/V sync terminal from machine.

Step 1： In Service 1 Mode select ADC Calibration - YUV. In this menu input pattern with 75% SMPTE pattern for calibrate YUV Source and notice that the input source must be 480i format . After input ready press “Enter” key to proceed.



Input Pattern

Step 2: After complete the OSD will show the picture as follow, if not complete, just close the OSD.

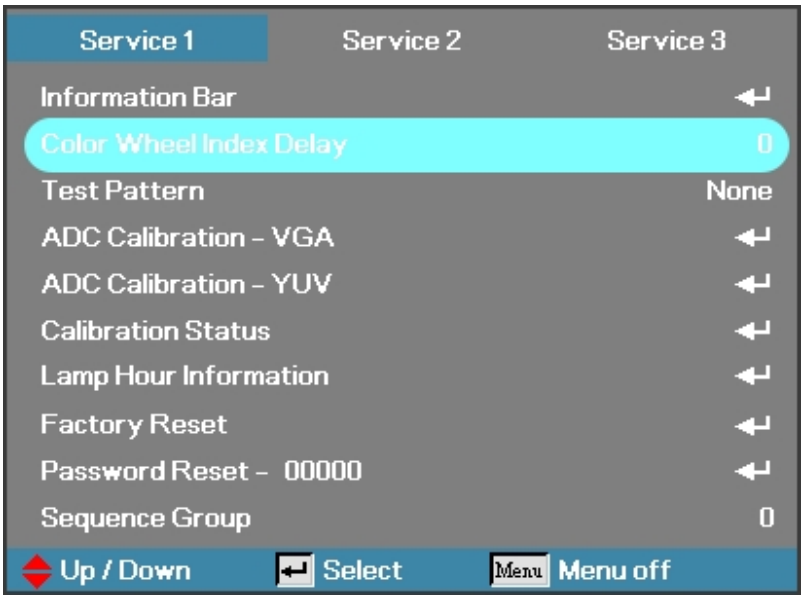


NOTE: You can select Calibration Status – VGA or Calibration Status – YUV item to watch the calibrated value at any time.

6-3. Color Wheel Index, DMD Contrast and Brightness Adjustment @ RGB source

A. Switch Timing to ”1024x768 @ 60HZ” for EX774 & “1280*800”for EW674.

B. In Service 1mode.



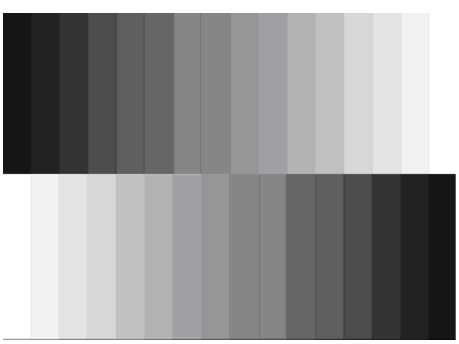
C. Switch to the Pattern 48 “32 Gray Scale”, and then decrease the Brightness Default Diff until all black gray scales are still distinct.

D. Switch to the Pattern 48 “32 Gray Scale”, and then increase the Contrast Default Diff until all white scales are still distinct.

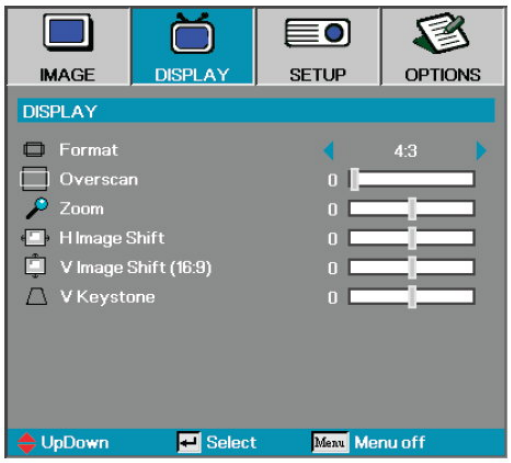
E. Select “Color Wheel Index Delay”.
The adjustment range is 0~719.

F. Switch Pattern 47 “16 Gray Scale”. Fine-tune until the gray scale still distinct. Decrease the color to the minimum. Then switch pattern 48 “32 Gray Scale”, tune off G, B channel, check the smooth in brighter level of the R 32 ramp. If not, fine tune “CW INDEX Delay Time” until R 32 ramp smooth.

Brightness and Contrast need to measure with RGB source
”1024x768 @ 60Hz” for EX774 & “1280*800 @ 60Hz”for EW674.



6-4. Display Test



Format - Use this function to choose your desired aspect ratio.

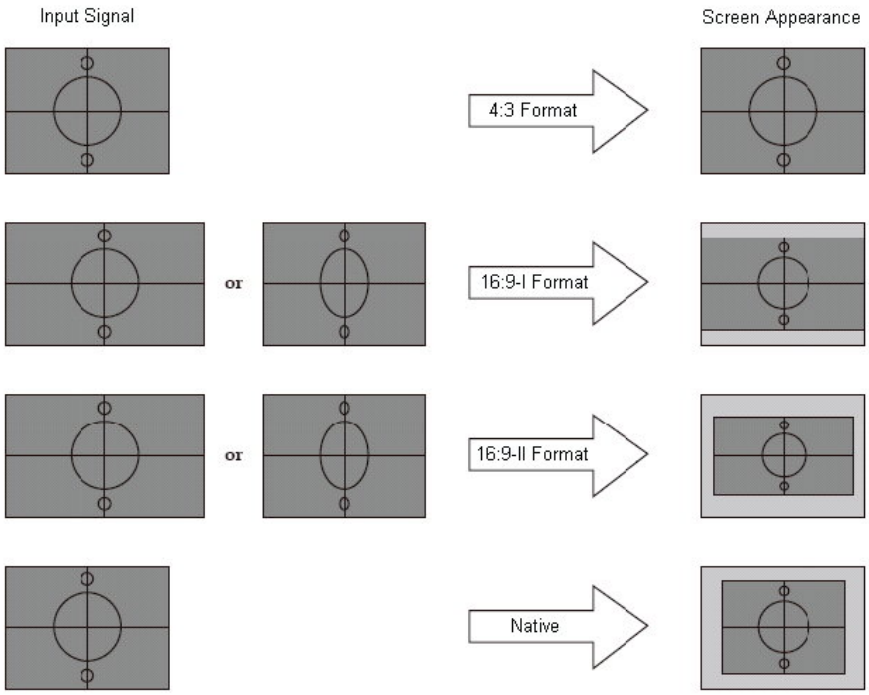
1. 4:3: Format is for 4x3 input sources not enhanced for Wide screen TV.

2. 16:9 I: This format is for 16x9 input sources, like HDTV and DVD enhanced for Wide screen TV.

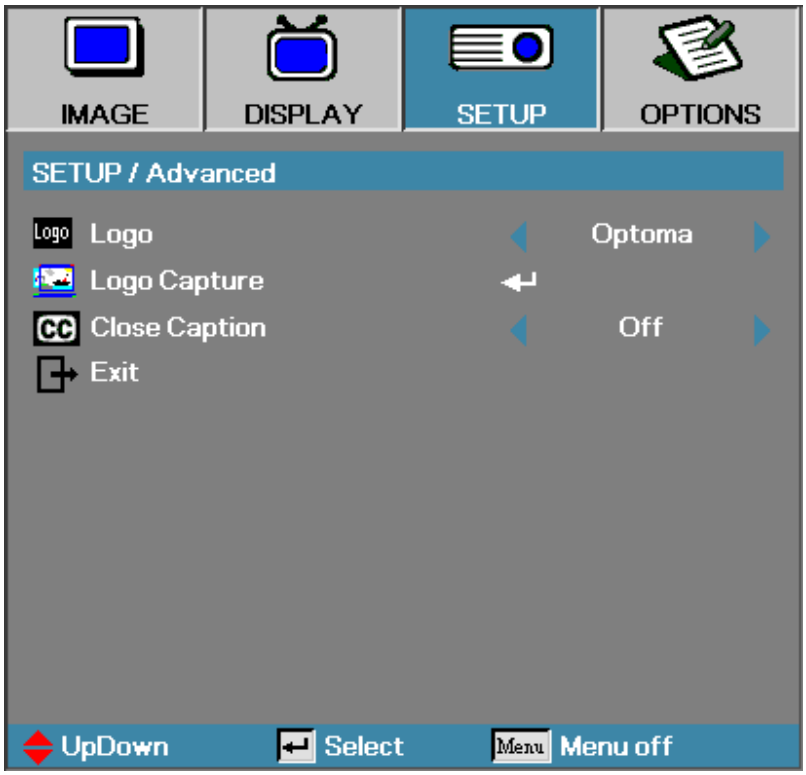
4. 16:9 II: The non-standard wide-screen display format of the projector. Part of the original image will be cut if the image aspect ratio is less than 1.67:1.

5. Native: Depends on the resolution of the display.

6. Auto: Automatically selects the appropriate format.

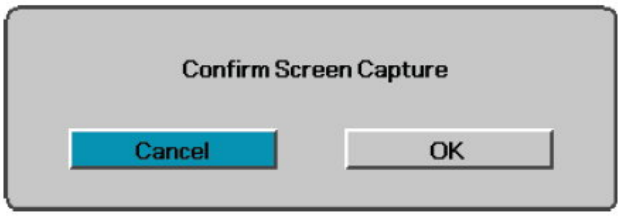


6-5. Logo Advanced



Logo
Select the screen to display during startup.
Optoma—the supplied default startup screen.
User—customized screen capture using the Logo Capture function.

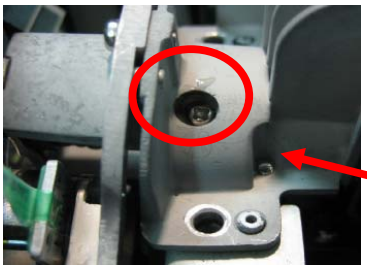
Logo Capture
Capture a displayed screen to use as the startup screen.
1. Display the desired screen on the projector.
2. Select Logo Capture from the Advanced menu.
A confirmation screen displays.



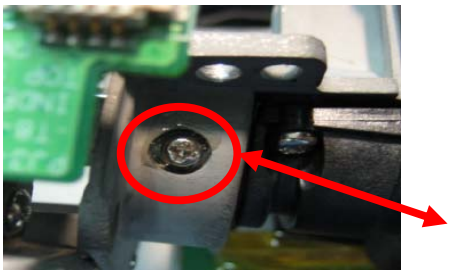
3. Select OK. Screen capture in progress.
Screen capture succeeded displays. The captured screen is saved as User in the Logo menu.

6-6.Color Border Adjustment

Step 1: Adjust integration rod screw to eliminate color edge @ White pattern.



1. Adjust the hexagonal screw in order to right and left side color border disappeared. (Enable just disappearing of left side color border on the full white pattern).



2. Adjust the hexagonal screw in order to up and down side color border disappeared. By the color border is margin value on the down side of full white pattern. (Enable just disappearing of down side color border on the full white pattern)

Step 2: Adjust lamp module angle to set the maximum brightness measured by CL200.

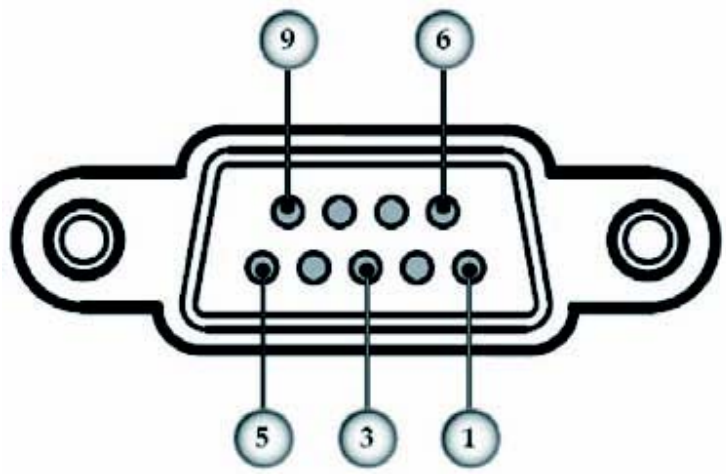
=> Adjusted screw.

=> Fixed screw.

Loosed the fixed screw, CL200 is putted on the left corner of the screen（When full set is putted upside down）, to adjust the adjusted screw gets the highest luminance value then fixed the screw in the moment.

7. How To Program By RS232

7-1. RS232 VGA-In Connector



Pin No	Name	I/O (From Projector Side)
1	NC	__
2	RXD	IN
3	TXD	OUT
4	NC	__
5	NC	__
6	NC	__
7	RS232	RTS
8	RS232	CTS
9	NC	__

7-2. RS232 Protocol Function List

Baud Rate : 9600
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control None
UART16550 FIFO: Disable
Projector Return (Pass): P
Projector Return (Fail): F

XX=01-99, projector's ID
XX=00 is for all projectors

RS232 Commands

SEND to projector

Note: There is a <CR> after all ASCII commands
0D is the HEX code for <CR> in ASCII code

232 ASCII Code	HEX Code	Function		Description
~XX00 1	7E 30 30 30 30 20 31 0D	Power ON		
~XX00 2	7E 30 30 30 30 20 32 0D	Power OFF		
~XX01 1	7E 30 30 30 31 20 31 0D	Resync		
~XX02 1	7E 30 30 30 32 20 31 0D	AV Mute	On	
~XX02 2	7E 30 30 30 32 20 32 0D		Off	
~XX04 1	7E 30 30 30 34 20 31 0D	Freeze		
~XX04 2	7E 30 30 30 34 20 32 0D	Unfreeze		
~XX11 1	7E 30 30 31 31 20 31 0D	IR Function	On	
~XX11 2	7E 30 30 31 31 20 32 0D		Off	
~XX12 2	7E 30 30 31 32 20 32 0D		DVI-D	
~XX12 3	7E 30 30 31 32 20 33 0D		DVI-A	
~XX12 5	7E 30 30 31 32 20 35 0D		VGA	
~XX12 7	7E 30 30 31 32 20 37 0D	Direct Source Selection	VGA SCART	
~XX12 8	7E 30 30 31 32 20 38 0D		VGA Component	
~XX12 9	7E 30 30 31 32 20 39 0D		S-video	
~XX12 10	7E 30 30 31 32 20 31 30 0D		Video	
~XX20 1	7E 30 30 32 30 20 31 0D	Display Mode	Presentation	
~XX20 2	7E 30 30 32 30 20 32 0D		Bright	
~XX20 3	7E 30 30 32 30 20 33 0D		Movie	
~XX20 4	7E 30 30 32 30 20 34 0D		sRGB	
~XX20 5	7E 30 30 32 30 20 35 0D		User 1	
~XX20 6	7E 30 30 32 30 20 36 0D		User 2	
~XX21 n	7E 30 30 32 31 20 a 0D	Brightness		n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX22 n	7E 30 30 32 32 20 a 0D	Contrast		n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX23 n	7E 30 30 32 33 20 a 0D	Sharpness		n= -15 (a=2D 31 35) - +15 (a=31 35)
~XX44 n	7E 30 30 34 34 20 a 0D	Saturation		n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX45 n	7E 30 30 34 35 20 a 0D	Tint		n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX24 n	7E 30 30 32 34 20 a 0D	Color	Red Gain	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX25 n	7E 30 30 32 35 20 a 0D		Green Gain	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX26 n	7E 30 30 32 36 20 a 0D		Blue Gain	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX27 n	7E 30 30 32 37 20 a 0D		Red Bias	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX28 n	7E 30 30 32 38 20 a 0D		Green Bias	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX29 n	7E 30 30 32 39 20 a 0D		Blue Bias	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX30 n	7E 30 30 33 30 20 a 0D		Cyan	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX31 n	7E 30 30 33 31 20 a 0D		Yellow	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX32 n	7E 30 30 33 32 20 a 0D		Magenta	n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX33 1	7E 30 30 33 33 20 31 0D		Reset	
~XX34 n	7E 30 30 33 34 20 a 0D	White Peaking		n= 0 (a=30) – 10 (a=31 30)
~XX35 1	7E 30 30 33 35 20 31 0D	Degamma	Film	
~XX35 2	7E 30 30 33 35 20 32 0D		Video	
~XX35 3	7E 30 30 33 35 20 33 0D		Graphics	
~XX35 4	7E 30 30 33 35 20 34 0D		PC	
~XX36 1	7E 30 30 33 36 20 31 0D	Color Temp.	Warm	
~XX36 2	7E 30 30 33 36 20 32 0D		Medium	
~XX36 3	7E 30 30 33 36 20 33 0D		Cold	
~XX37 1	7E 30 30 33 37 20 31 0D	Color Space	Auto	
~XX37 2	7E 30 30 33 37 20 32 0D		RGB	
~XX37 3	7E 30 30 33 37 20 33 0D		YUV	
~XX39 2	7E 30 30 33 39 20 32 0D	Input Source	DVI-I	
~XX39 5	7E 30 30 33 39 20 35 0D		VGA	
~XX39 9	7E 30 30 33 39 20 39 0D		S-Video	
~XX39 10	7E 30 30 33 39 20 31 30 0D		Video	
~XX40 1	7E 30 30 34 30 20 31 0D	De-interlace	On	
~XX40 2	7E 30 30 34 30 20 32 0D		Off	
~XX60 1	7E 30 30 36 30 20 31 0D	Format	4:3	
~XX60 2	7E 30 30 36 30 20 32 0D		16:9-I	
~XX60 3	7E 30 30 36 30 20 33 0D		16:9-II/16 :10	
~XX60 5	7E 30 30 36 30 20 35 0D		Natvie	
~XX60 7	7E 30 30 36 30 20 37 0D		Auto	
~XX61 n	7E 30 30 36 31 20 a 0D	Overscan		n= 0 (a=30) – 10 (a=31 30)
~XX62 n	7E 30 30 36 32 20 a 0D	Zoom		n= -30 (a=2D 33 30) - +50 (a=35 30)
~XX63 n	7E 30 30 36 33 20 a 0D	H Image Shift		n= -50 (a=2D 35 30) - +50 (a=35 30)
~XX64 n	7E 30 30 36 34 20 a 0D	V Image Shift		n= -24 (a=2D 32 34) - +24 (a=32 34)
~XX66 n	7E 30 30 36 36 20 a 0D	V Keystone		n= -30 (a=2D 33 30) - +30 (a=33 30)
~XX70 1	7E 30 30 37 30 20 31 0D	Language	English	
~XX70 2	7E 30 30 37 30 20 32 0D		German	
~XX70 3	7E 30 30 37 30 20 33 0D		French	
~XX70 4	7E 30 30 37 30 20 34 0D		Italian	
~XX70 5	7E 30 30 37 30 20 35 0D		Spanish	
~XX70 6	7E 30 30 37 30 20 36 0D		Portuguese	
~XX70 7	7E 30 30 37 30 20 37 0D		Polish	
~XX70 8	7E 30 30 37 30 20 38 0D		Dutch	
~XX70 9	7E 30 30 37 30 20 39 0D		Swedish	
~XX70 10	7E 30 30 37 30 20 31 30 0D		Norwegian/Danish	
~XX70 11	7E 30 30 37 30 20 31 31 0D		Finnish	
~XX70 12	7E 30 30 37 30 20 31 32 0D		Greek	
~XX70 13	7E 30 30 37 30 20 31 33 0D		Traditional Chinese	
~XX70 14	7E 30 30 37 30 20 31 34 0D		Simplified Chinese	
~XX70 15	7E 30 30 37 30 20 31 35 0D		Japanese	
~XX70 16	7E 30 30 37 30 20 31 36 0D		Korean	
~XX70 17	7E 30 30 37 30 20 31 37 0D		Russian	
~XX70 18	7E 30 30 37 30 20 31 38 0D		Hungarian	
~XX70 19	7E 30 30 37 30 20 31 39 0D		Czechoslovak	
~XX70 20	7E 30 30 37 30 20 32 30 0D		Arabic	
~XX70 21	7E 30 30 37 30 20 32 31 0D		Thai	
~XX70 22	7E 30 30 37 30 20 32 32 0D		Turkish	

~XX71 1	7E 30 30 37 31 20 31 0D	Projection	Front-Desktop	
~XX71 2	7E 30 30 37 31 20 32 0D		Rear-Desktop	
~XX71 3	7E 30 30 37 31 20 33 0D		Front-Ceiling	
~XX71 4	7E 30 30 37 31 20 34 0D		Rear-Ceiling	
~XX72 1	7E 30 30 37 32 20 31 0D	Menu Location	Top Left	
~XX72 2	7E 30 30 37 32 20 32 0D		Top Right	
~XX72 3	7E 30 30 37 32 20 33 0D		Center	
~XX72 4	7E 30 30 37 32 20 34 0D		Bottom Left	
~XX72 5	7E 30 30 37 32 20 35 0D		Bottom Right	
~XX73 n	7E 30 30 37 33 20 a 0D	Signal	Frequency	n= 0 (a=30) – 31 (a=33 31)
~XX74 n	7E 30 30 37 34 20 a 0D		Phase	n= -5 (a=2D 35) - +5 (a=35)
~XX75 n	7E 30 30 37 35 20 a 0D		H. Position	n= -5 (a=2D 35) - +5 (a=35)
~XX76 n	7E 30 30 37 36 20 a 0D		V. Position	n= -5 (a=2D 35) - +5 (a=35)
~XX77 n	7E 30 30 37 37 20 aabbcc 0D	Security	Security Timer	Hour /Day/ Month n=hhddmm hh= 0 (a=30) ~ 24 (a=32 34) dd= 0 (a=30) ~ 30 (a=33 30) mm= 0 (a=30) ~ 12 (a=31 32)
~XX78 1	7E 30 30 37 38 20 31 0D		Security Settings	Enable
~XX78 2	7E 30 30 37 38 20 32 0D		Disable	
~XX79 n	7E 30 30 37 39 20 a 0D		Projector ID	n=0 (a=30)- 99 (a=39 39)
~XX80 1	7E 30 30 38 30 20 31 0D		Mute	On
~XX80 2	7E 30 30 38 30 20 32 0D		Off	
~XX81 n	7E 30 30 38 31 20 a 0D	Volume		n= 0 (a=30) – 10 (a=31 30)
~XX89 1	7E 30 30 38 39 20 31 0D	Audio Input	Mini Jack	
~XX89 1	7E 30 30 38 39 20 32 0D		RCA	
~XX82 1	7E 30 30 38 32 20 31 0D	Logo	Optoma	
~XX82 2	7E 30 30 38 32 20 32 0D		User	
~XX83 1	7E 30 30 38 33 20 31 0D	Logo capture		
~XX88 1	7E 30 30 38 34 20 31 0D	Close Caption	On	
~XX88 2	7E 30 30 38 34 20 32 0D		Off	
~XX86 1	7E 30 30 38 36 20 31 0D	RS232	RS232	
~XX86 2	7E 30 30 38 36 20 32 0D		Network	
~XX100 1	7E 30 30 31 30 30 20 31 0D	Source Lock	On	
~XX100 2	7E 30 30 31 30 30 20 32 0D		Off	
~XX101 1	7E 30 30 31 30 31 20 31 0D	High Altitude	On	
~XX101 2	7E 30 30 31 30 31 20 32 0D		Off	
~XX102 1	7E 30 30 31 30 32 20 31 0D	Information Hide	On	
~XX102 2	7E 30 30 31 30 32 20 32 0D		Off	
~XX103 1	7E 30 30 31 30 33 20 31 0D	Keypad Lock	On	
~XX103 2	7E 30 30 31 30 33 20 32 0D		Off	
~XX104 1	7E 30 30 31 30 34 20 31 0D	Background Color	Blue	
~XX104 2	7E 30 30 31 30 34 20 32 0D		Black	
~XX104 3	7E 30 30 31 30 34 20 33 0D		Red	
~XX104 4	7E 30 30 31 30 34 20 34 0D		Green	
~XX104 5	7E 30 30 31 30 34 20 35 0D		White	
~XX105 1	7E 30 30 31 30 35 20 31 0D	Advanced	Direct Power On	On
~XX105 2	7E 30 30 31 30 35 20 32 0D			Off
~XX106 n	7E 30 30 31 30 36 20 a 0D		Auto Power Off (min)	n=0 (a=30)-120 (a=31 32 30) (multiple of 5)
~XX107 n	7E 30 30 31 30 37 20 a 0D		Sleep Timer (min)	n=0 (a=30)-900 (a=39 30 30) (multiple of 5)
~XX108 1	7E 30 30 31 30 38 20 31 0D	Lamp Setting	Lamp Hour	
~XX109 1	7E 30 30 31 30 39 20 31 0D		Lamp Reminder	On
~XX109 2	7E 30 30 31 30 39 20 32 0D			Off
~XX110 1	7E 30 30 31 31 30 20 31 0D		Brightness Mode	Bright
~XX110 2	7E 30 30 31 31 30 20 32 0D			STD
~XX111 1	7E 30 30 31 31 31 20 31 0D		Lamp Reset	Yes
~XX111 2	7E 30 30 31 31 31 20 32 0D		No	
~XX112 1	7E 30 30 31 31 32 20 31 0D	Reset		Yes
~XX112 2	7E 30 30 31 31 32 20 32 0D			No

SEND to Remote

~XX140 1	7E 30 30 31 34 30 20 31 0D	Power
~XX140 3	7E 30 30 31 34 30 20 33 0D	Remote Mouse Up
~XX140 4	7E 30 30 31 34 30 20 34 0D	Remote Mouse Left
~XX140 5	7E 30 30 31 34 30 20 35 0D	Remote Mouse Enter
	7E 30 30 31 34 30 20 36 0D	Remote Mouse Right
	7E 30 30 31 34 30 20 37 0D	Remote Mouse Down
	7E 30 30 31 34 30 20 38 0D	Mouse Left Click
	7E 30 30 31 34 30 20 39 0D	Mouse Right Click
	7E 30 30 31 34 30 20 31 30 0D	Up/Page +
	7E 30 30 31 34 30 20 31 31 0D	Left/Source
	7E 30 30 31 34 30 20 31 32 0D	Enter (for projection MENU)
	7E 30 30 31 34 30 20 31 33 0D	Right/Re-SYNC
	7E 30 30 31 34 30 20 31 34 0D	Down/Page -
	7E 30 30 31 34 30 20 31 35 0D	Keystone +
	7E 30 30 31 34 30 20 31 36 0D	Keystone -
	7E 30 30 31 34 30 20 31 37 0D	Volume -
	7E 30 30 31 34 30 20 31 38 0D	Volume +
	7E 30 30 31 34 30 20 31 39 0D	Brightness
	7E 30 30 31 34 30 20 32 30 0D	Menu
	7E 30 30 31 34 30 20 32 31 0D	Zoom
	7E 30 30 31 34 30 20 32 32 0D	DVI-I
	7E 30 30 31 34 30 20 32 33 0D	Freeze
	7E 30 30 31 34 30 20 32 34 0D	AV Mute
	7E 30 30 31 34 30 20 32 35 0D	S-Video
	7E 30 30 31 34 30 20 32 36 0D	VGA
	7E 30 30 31 34 30 20 32 37 0D	Video

tor automatically

HEX Code	Function	Projector Return	Description
ming/Cooling/Out of Range/Lamp fail		INFOn	n : 0/1/2/3/4 = Standby/Warming/Cooling/Out of Range/Lamp fail

tor

HEX Code	Function	Projector Return	Description
7E 30 30 31 32 31 20 31 0D	Input Source Commands	OKn	n: 0/1/2/3/4= None/DVI-I/VGA/S-Video/Video
7E 30 30 31 32 32 20 31 0D	Software Version	OKaaaa	
7E 30 30 31 32 33 20 31 0D	Display Mode	OKn	n: 0/1/2/3/4/5=Presentation/Bright/Movie/sRGB/User1/User2
7E 30 30 31 32 34 20 31 0D	Power State	OKn	n: 0/1=Off/On
7E 30 30 31 32 35 20 31 0D	Brightness	OKn	
7E 30 30 31 32 36 20 31 0D	Contrast	OKn	
7E 30 30 31 32 37 20 31 0D	Aspect Ratio	OKn	n: 0/1/2/3/4=4:3/16:9l/16:9II or 16:10/Native/auto
7E 30 30 31 32 38 20 31 0D	Color Temperature	OKn	n: 0/1/2=Warm/Medium/Cold
7E 30 30 31 32 39 20 31 0D	Projection Mode	OKn	n: 0/1/2/3=Front-Desktop/Rear-Desktop/Front-Ceiling/Rear-Ceiling
7E 30 30 31 35 30 20 31 0D	Information	OKabbbbcdddde	a : 0/1=Off/On bbbb: Lamp Hour c: source 0/1/2/3/4= None/DVI-I /VGA/S-Video/Video dddd: FW version e : Display mode 0/1/2/3/4/5=Presentation/Bright/Movie/sRGB/User1/User2
7E 30 30 31 35 31 20 31 0D	Model Name	OKn	n : 0/1/2=EX774/EW674/EX772
7E 30 30 31 35 32 20 31 0D	RS232 Version No	OKn	

7-3. Hyper Terminal setting guide

7-3-1 Connect the RS232 Cable between your computer and Projector.

7-3-2 Open HyperTerminal

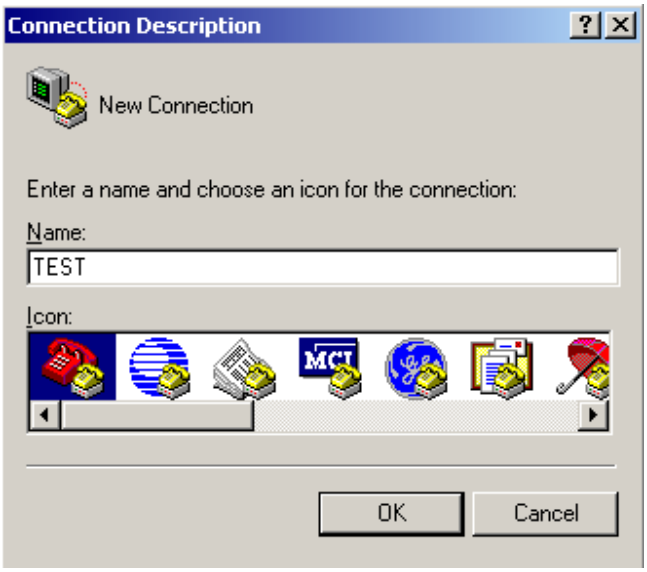
Window2000/XP HyperTerminal path：

Start \ Programs \ Accessories \ Communications \ HyperTerminal.

HyperTerminal
by Hilgraeve Monroe, Michigan USA
For more power and convenience, upgrade to hot new HyperACCESS, TODAY!
Developed for Microsoft by Hilgraeve Inc.
Upgrade Info...
Copyright 1999 Hilgraeve Inc.

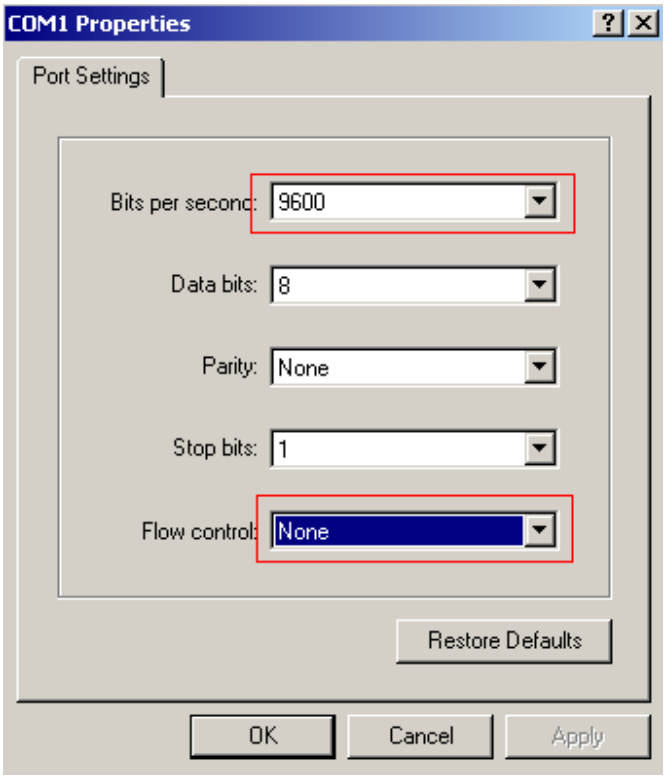
7-3-3 Setting the HyperTerminal parameter：

Step 1. Type the connection name.

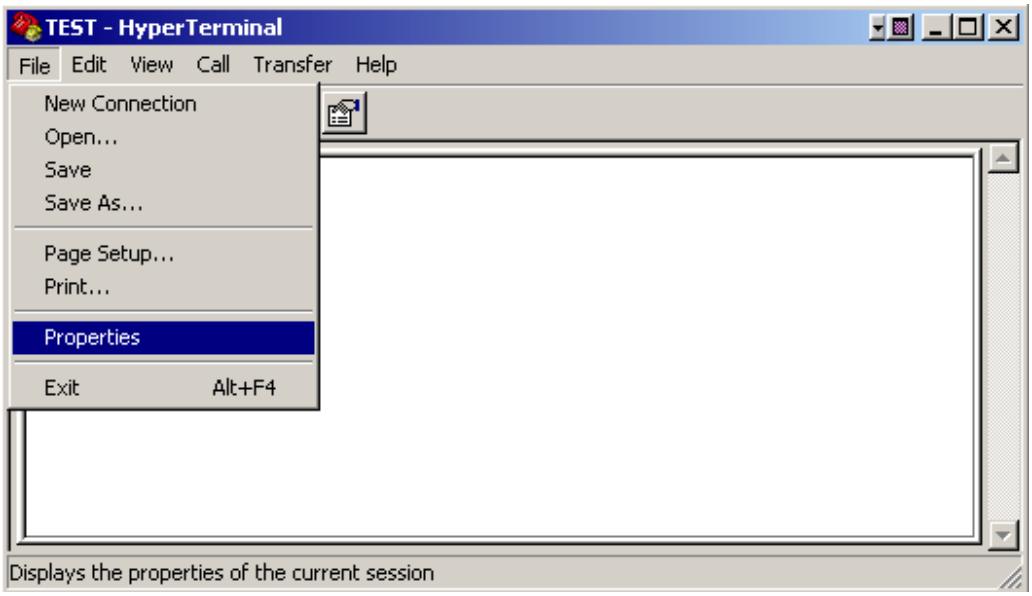


Step2. Choose the COM port for your RS232 Cable connected to.

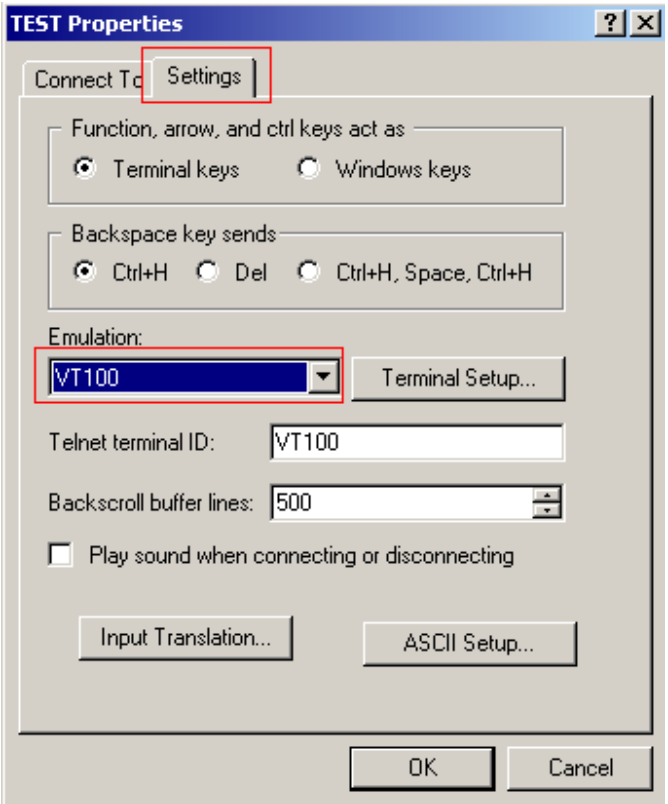
Step3. In Bits per second choose “ 9600 ” and in Flow control choose “ None ”.



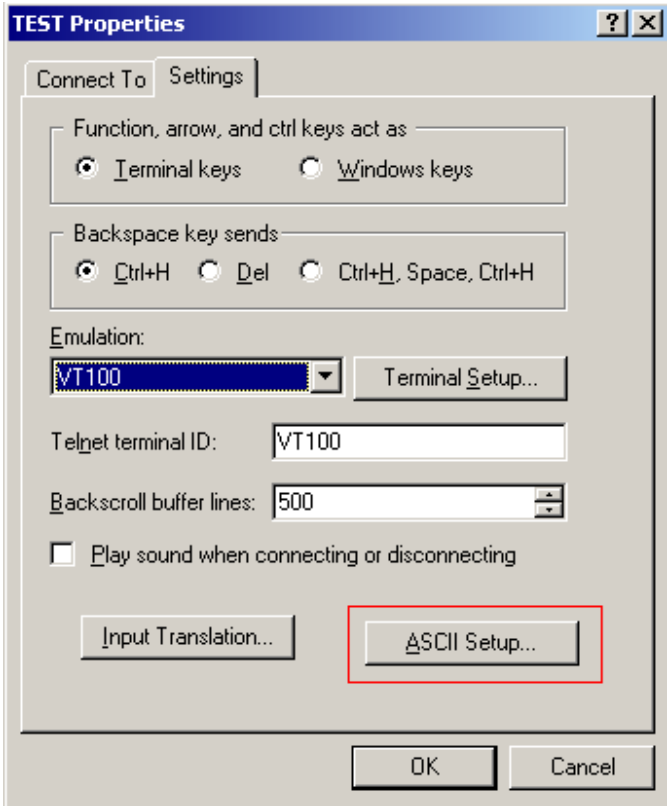
Step4. Click the File and choose Properties to setting Keyboard parameter.



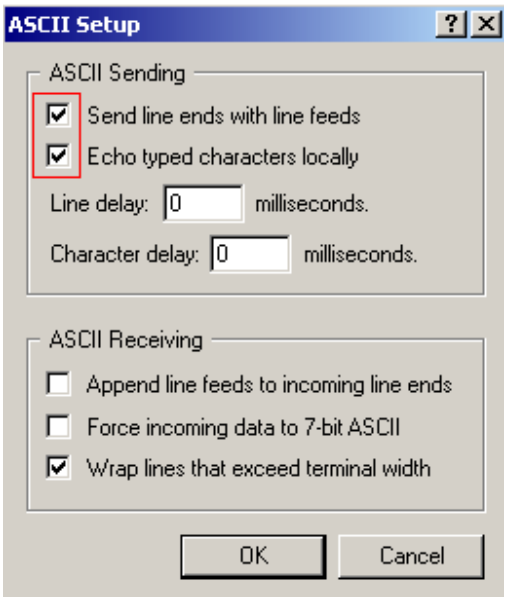
Step5. In Setting page, choose Emulation type for your keyboard.



Step6. Click ASCII Setting icon to setup ASCII code parameter.



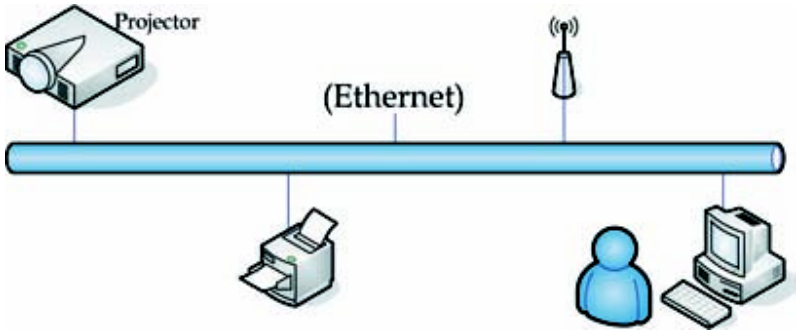
Step7. Mark Send Line ends with line feeds and Echo typed characters locally and click OK bottom to complete setting.



8.LAN_RJ45 (RJ45 models only)

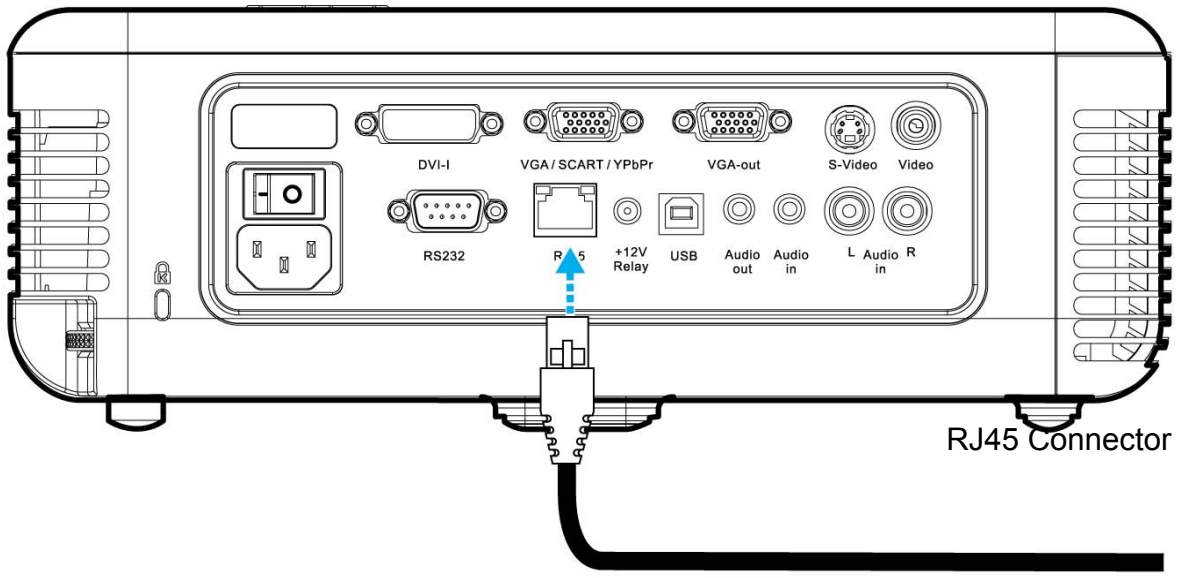
For simplicity and ease of operation, the Optoma projector provides diverse networking and remote management features.

The LAN/RJ45 function of the projector through a network, such as remotely manage: Power On/Off, Brightness and Contrast settings. Also, projector status information, such as: Video-Source, Sound-Mute, etc.



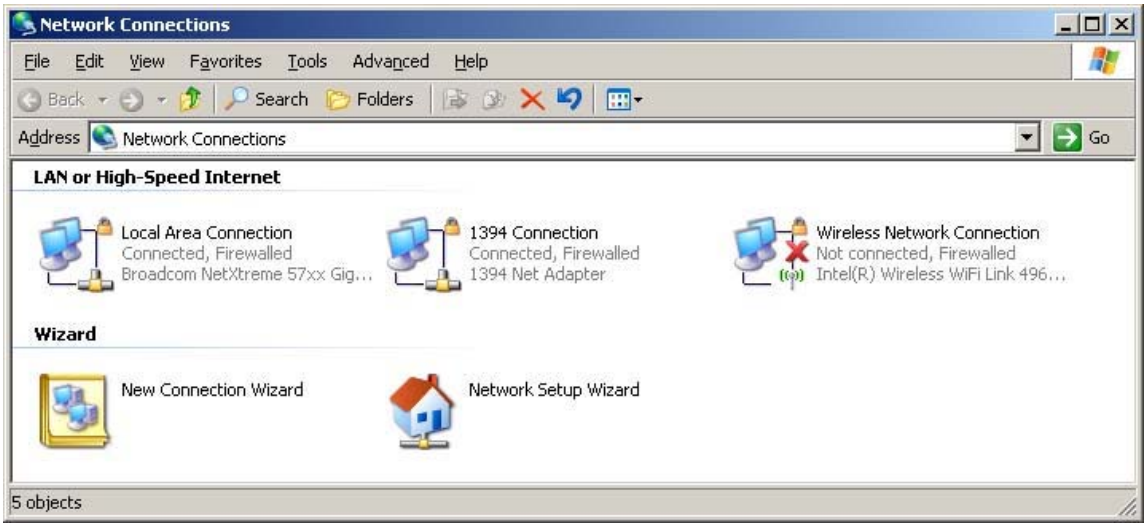
LAN_RJ45

1. Connect an RJ45 cable to RJ45 ports on the projector and the PC (Laptop).

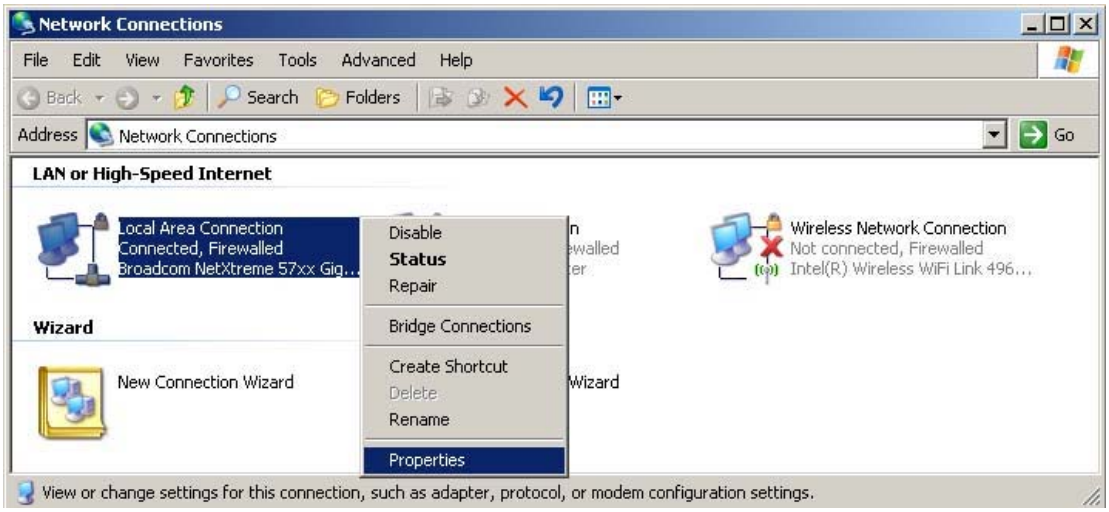


2. On the PC (Laptop), select Start -> Control Panel-> Network Connections.

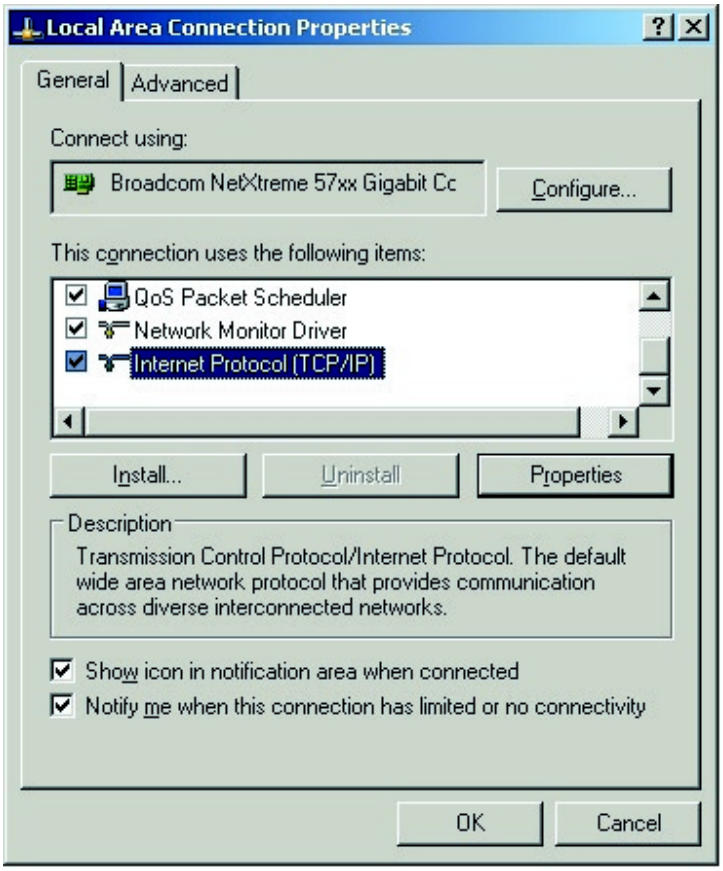
3. Right Click on your Local Area Connection, and select Property.



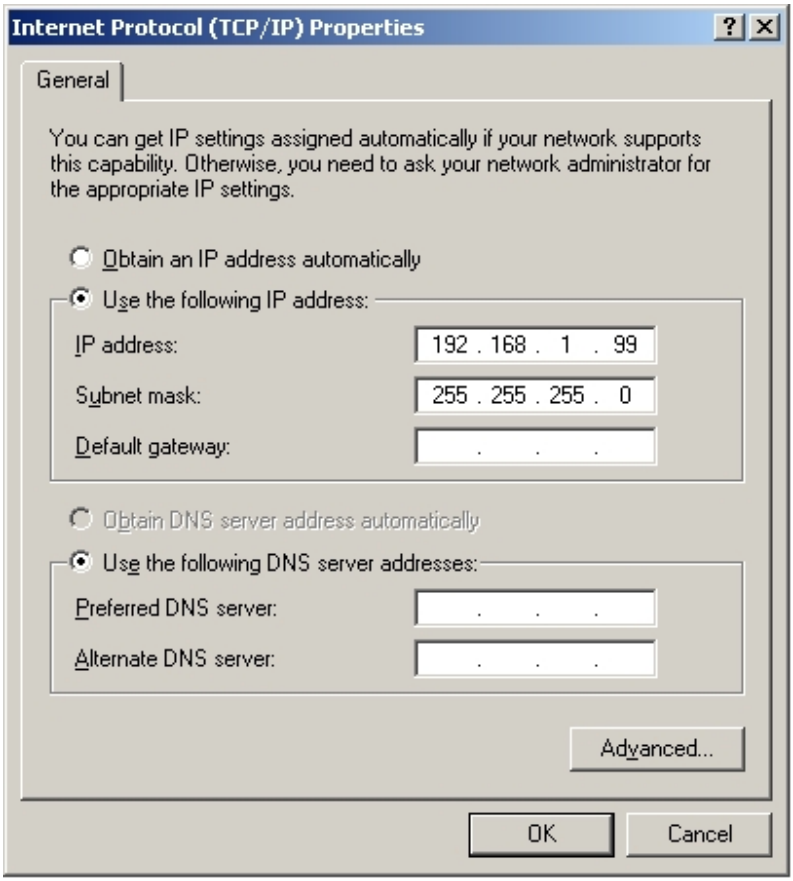
4. In the Properties window, select the **General tab**, and select **Internet Protocol (TCP/IP)**.



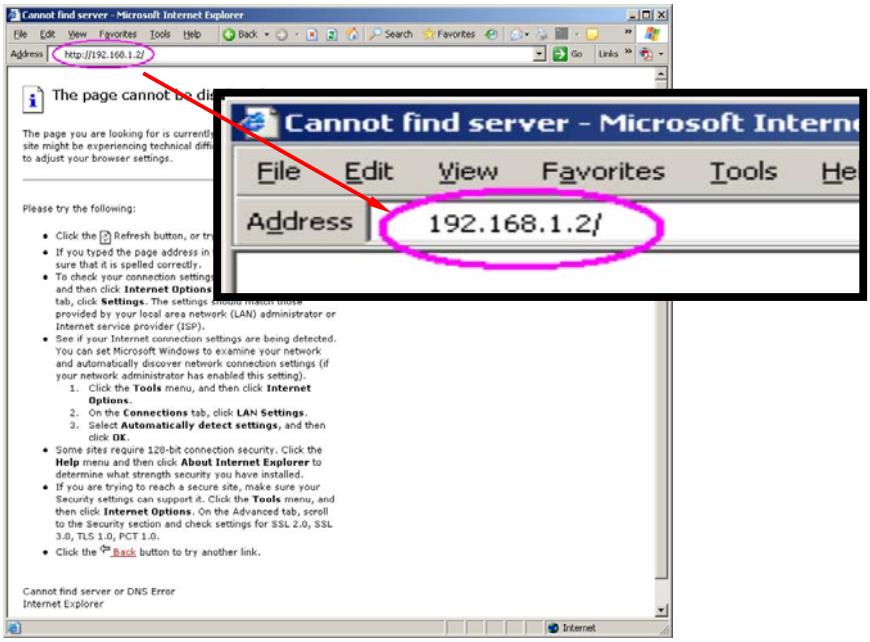
5. Click **Properties**.



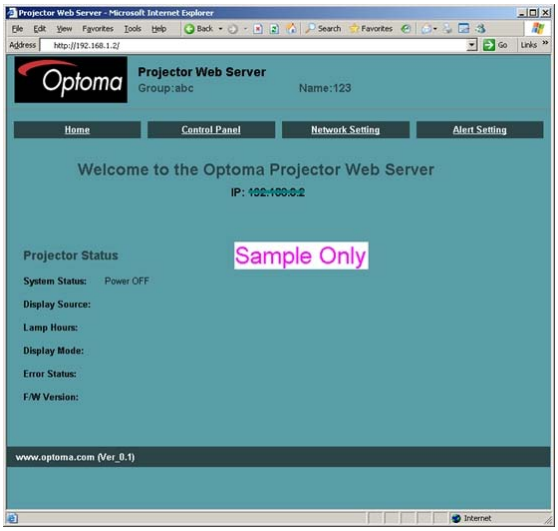
6. Fill in the IP address and Subnet mask, then press OK.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 99
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

7. Press the **Menu** button on the projector.



8. Select OSD-> SETUP-> Network-> Enabled.



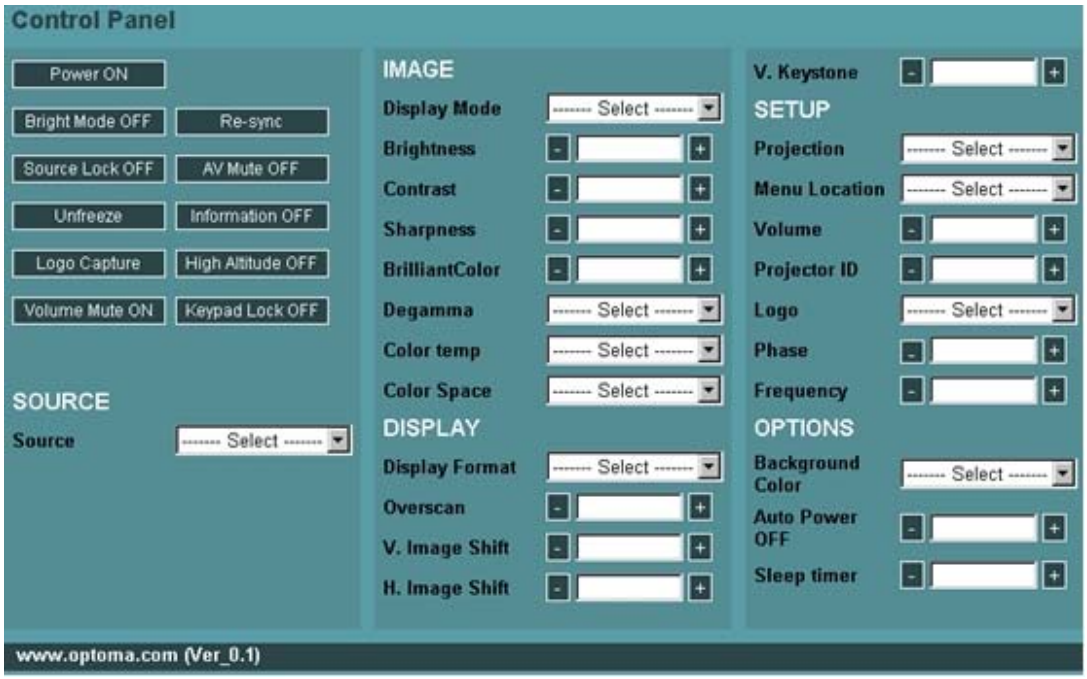
9. Input the following:

IP Address: 192.168.10.2

Subnet Mask: 255.255.255.0

Gateway: 0.0.0.0

DNS Server: 0.0.0.0



10. Press **Apply** (Enter) to confirm settings.
11. Open a web browser (ex, Microsoft Internet Explorer).
12. In the Address bar, input the IP address: 192.168.10.10.
13. Press **Enter**.

The projector is setup for remote management. The LAN/RJ45 function displays as follows.

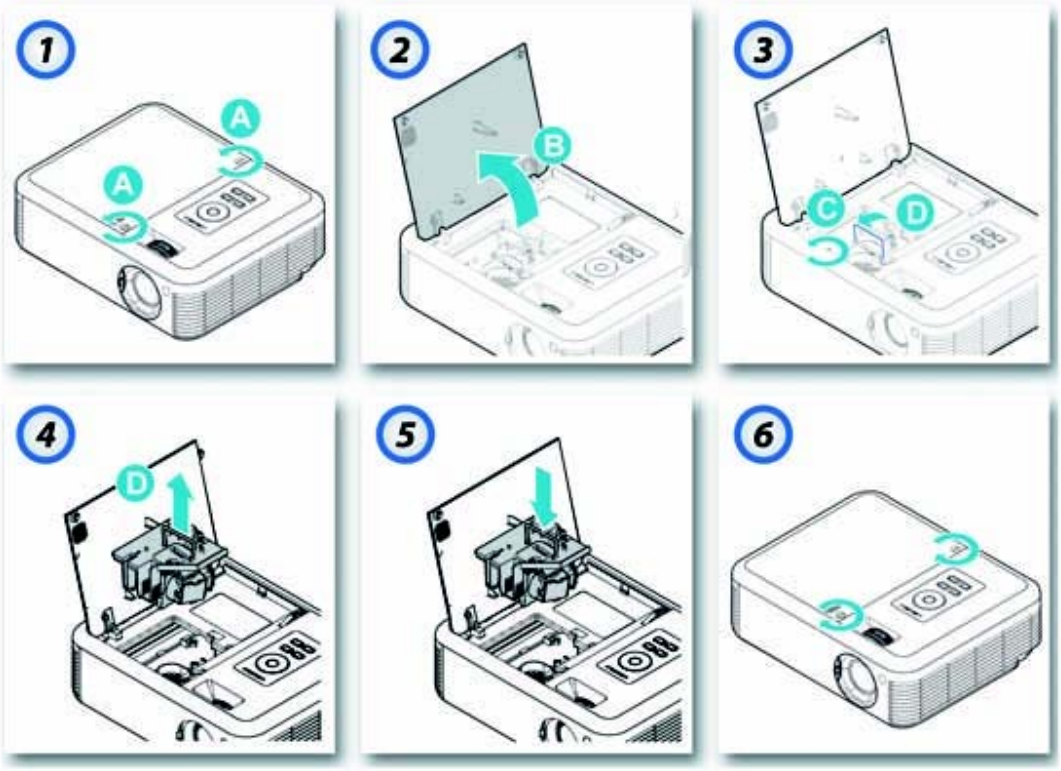
9. Projection Lamp

9-1. Replacing the Projection Lamp

The projection lamp should be replaced when it burns out. It should only be replaced with a certified replacement part, which you can order from your local dealer.

Important:
1. The lamp contains a certain amount of mercury and should be disposed according to local ordinance regulations.
2. Avoid touching the glass surface of the new lamp: Doing so may shorten its operation life.

Warning:
Be sure to turn off and unplug the projector at least 30 minutes before replacing the lamp. Failure to do so could result in a severe burn.



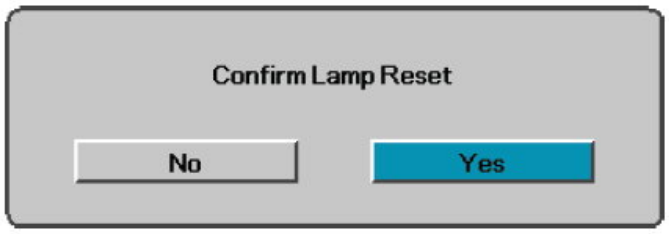
1. Loosen the two captive screws on the lamp compartment cover.
2. Open the lamp compartment cover.
3. Remove the two screws from the lamp module.
4. Lift the module handle up.
5. Replace the lamp module.
6. Reverse steps 1 to 5 to install the new lamp module.

9-2 Resetting the Lamp

Lamp Reset

After replacing the lamp, reset the lamp counter to accurately reflect the new lamp's life span.

1. Select Lamp Reset.
   A confirmation screen displays.



2. Select **Yes** to reset the lamp counter to zero.

9-3. Ceiling Installation

To prevent damage to your projector please use the recommended mounting package for installation.

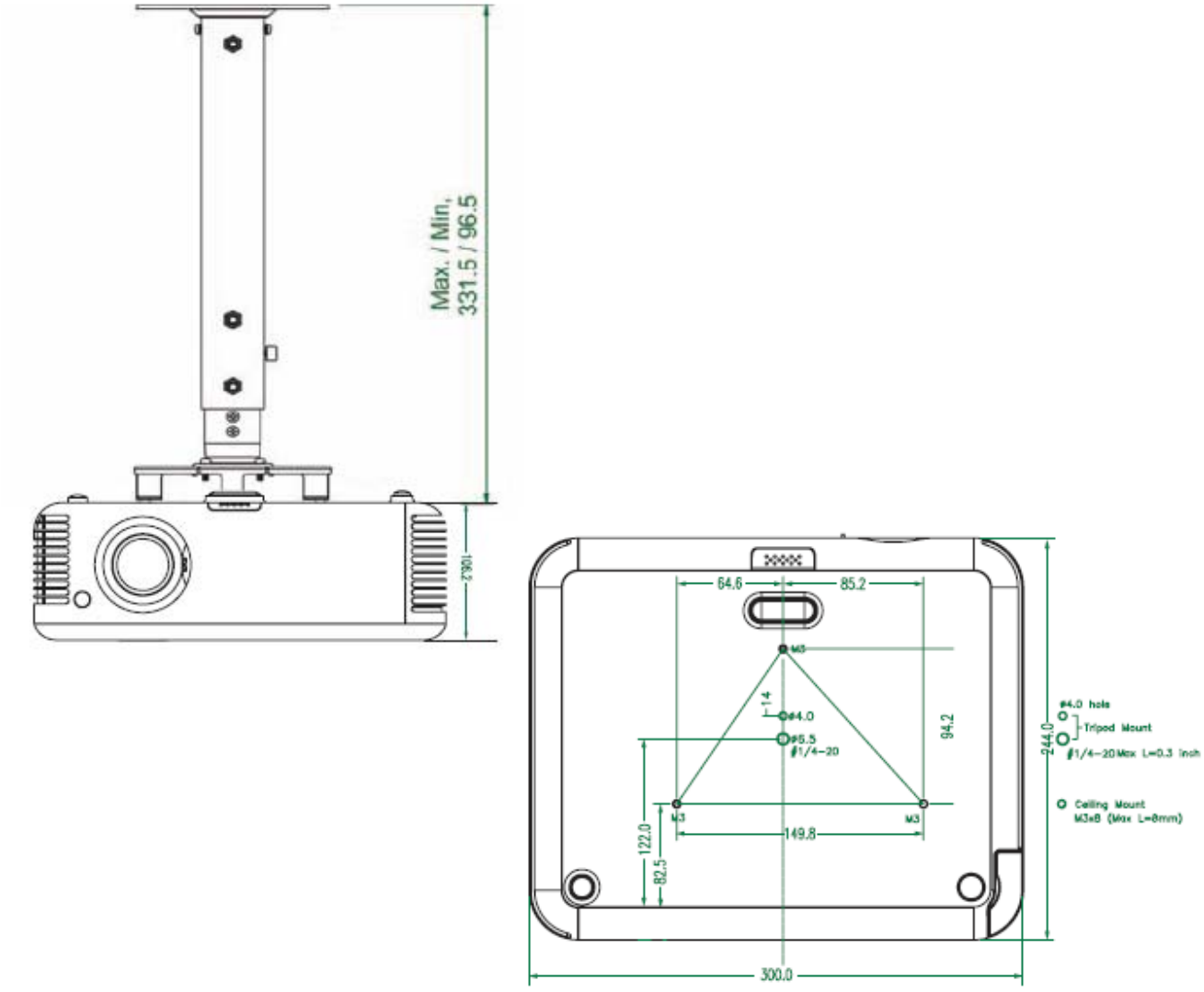
If you intend to use a third party ceiling mount, ensure that the screws meet the following specifications:

1 x 4 mm Tripod Mounts—M3x8, maximum length 0.3"

1 x 6.5 mm Tripod Mount—#1/4-20, maximum length 0.3"

M3 – 3 x M3 Ceiling Mounts—M3x8, maximum length 8 mm

Refer to the following diagram to ceiling mount the projector.



10. SERVICE NOTE

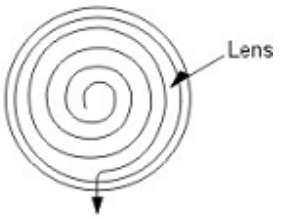
10-1.Cleaning the Projector

Cleaning the projector to remove dust and grime will help ensure trouble-free operation.

1. Be sure to turn off and unplug the projector at least 30 minutes before cleaning.
   Failure to do so could result in a severe burn.
2. Use only a dampened cloth when cleaning.
   Do not allow water to enter the ventilation openings on the projector.
3. If a little water gets into the projector interior while cleaning,
   leave unplugged in a well-ventilated room for several hours before using.
4. If a lot of water gets into the projector interior when cleaning, have the projector serviced.

10-1-1. Cleaning the Lens

You can purchase optic lens cleaner from most camera stores. Refer to the following to clean the projector lens.



1. Apply a little optic lens cleaner to a clean soft cloth.
   (Do not apply the cleaner directly to the lens.)
2. Lightly wipe the lens in a circular motion.

Caution:

1. Do not use abrasive cleaners or solvents.
2. To prevent discoloration or fading, avoid getting cleaner on the projector case.

10-1-2. Cleaning the Case

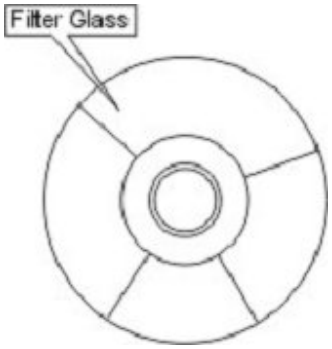
Refer to the following to clean the projector case.

1. Wipe off dust with a clean dampened cloth.
2. Moisten the cloth with warm water and mild detergent (such as used to wash dishes), and then wipe the case.
3. Rinse all detergent from the cloth and wipe the projector again

Caution:
To prevent discoloration or fading of the case, do not use abrasive alcohol-based cleaners.

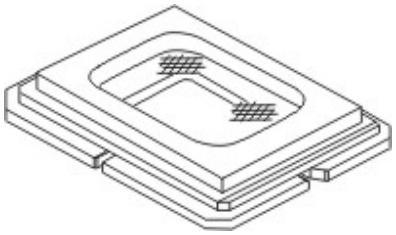
10-1-3. Cleaning the Color Wheel Assy

1. The color filter is made of thin glass. Be very careful when handing the filter.
2. In case of fingerprints, etc. on the surface, clean in the same way as the projection lens unit as described in item 10-1-1. Do not use detergents as this could cause peeling of the color filter.



10-1-4. Cleaning the DMD

1. The DMD surface is glass and can be cleaned. However, avoid scratches as these can have a direct influence on the image.
2. In case of dust on the DMD surface use an air cleaner (with a device to prevent static, if possible) to clean off the surface.
3. In case of fingerprints, etc., add a small amount of water to the designated glass cleaner and wipe off in one direction. Then use the designated dry glass cleaner to wipe off in the same direction.
4. Do not use absolute alcohol or other substances that could leave streaks after drying.



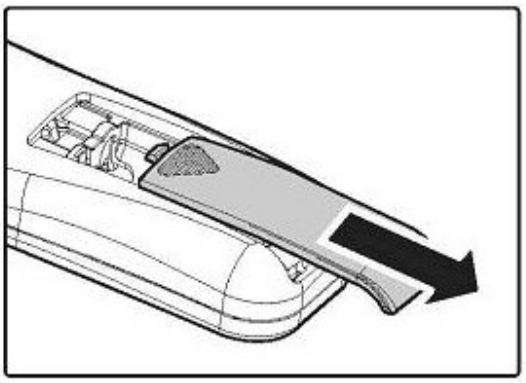
10-1-5. Cleaning the Reflecting Mirror

1. Be careful not to touch the reflecting mirror. The surface is composed of vapor deposition silver and touching it directly with the hands can lead to burnishing.
2. Do not clean other than with air.

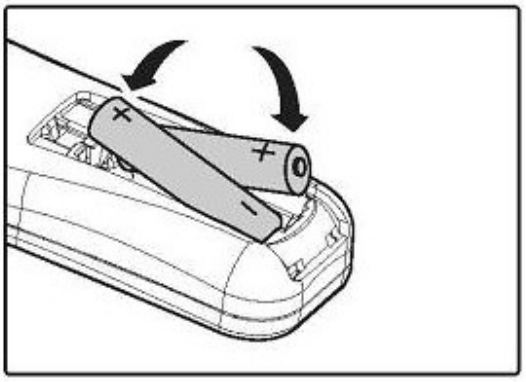
10-2. Remote control for battery replacement

Inserting the Remote Control Batteries

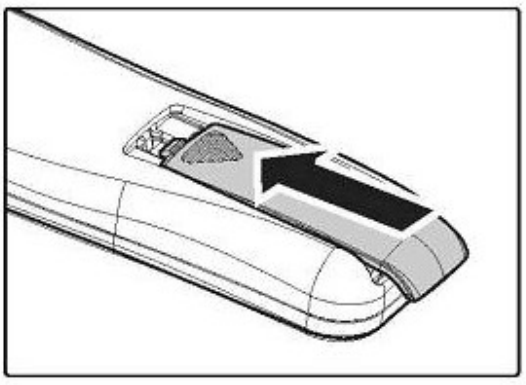
1. Remove the battery compartment cover by sliding the cover in the direction of the arrow.



2. Insert the supplied batteries taking note of the polarity (+/-) as shown here.



3. Replace the cover.



Caution:
1. *Only use AAA alkaline batteries.*

2. *Dispose of used batteries according to local ordinance regulations.*

3. *Remove the batteries when not using the projector for prolonged periods.*

10-3. Power & READY LED Blink Code Message

Error code message	Power LED Blink	Ready LED Blink
T1 temperature over temperature	3	0
Thermal break	4	0
G794 fail	4	4
T1 fail	4	5
Lamp error	5	0
Ballast Over Temperature	5	1
Ballast shot circuit in output detected	5	2
End of lamp lift detected	5	3
Ballast lamp did not ignite	5	4
Lamp extinguished during normal operation	5	5
Lamp extinguished during run-up phase	5	6
Fan1 error (Lamp Fan)	6	1
Fan2 error (Ballast Fan)	6	2
Fan3 error (Burner Fan)	6	3
Fan4 error (Power Fan)	6	4
Lamp door open	7	0
DMD error	8	0
Color wheel error	9	0

10-4. Factory Preset Display Modes

Computer Compatibility

Signal	Resolution	Refresh Rate (Hz)
NTSC	-	60
PAL/SECAM	-	50
VESA	640 x 350	70.1/ 85.1
	640 x 400	70.1 / 85.1
	720 x 350	70
	720 x 400	70/ 85/ 88
	720 x 576	50/ 60
VGA	640 x 480	60/ 67/ 72.8/ 75/ 85
SVGA	800 x 600	56.3/ 60.3/ 75/ 72.2/ 80/ 85.1
	832 x 624	72/ 75
	1024 x 576	50/ 60
XGA	1024 x 768	60/ 70.1/ 72/ 75/ 85/ 87
	1152 x 864	60/ 70/ 75/85/ 75
HD720	1280 x 720	50/ 60/ 75/ 85
WXGA	1280 x 768	60/ 70/ 75/ 85
WXGA-800	1280 x 800	60
SXGA	1280 x 1024	60/ 75/85
SXGA+	1400 x 1050	60
UXGA	1600 x 1200	60
	1600 x 1050	60
HD1080	1920 x 1080	24/ 50/ 60/75
WUXGA	1920 x 1200	60/ 75
HDTV	1920 x 1080i	50/ 60
	1920 x 1080p	50/ 60
	1280 x 720p	50/ 60
SDTV	720 x 576i	50
	720 x 576p	50
	720 x 480i	60
	720 x 480p	60

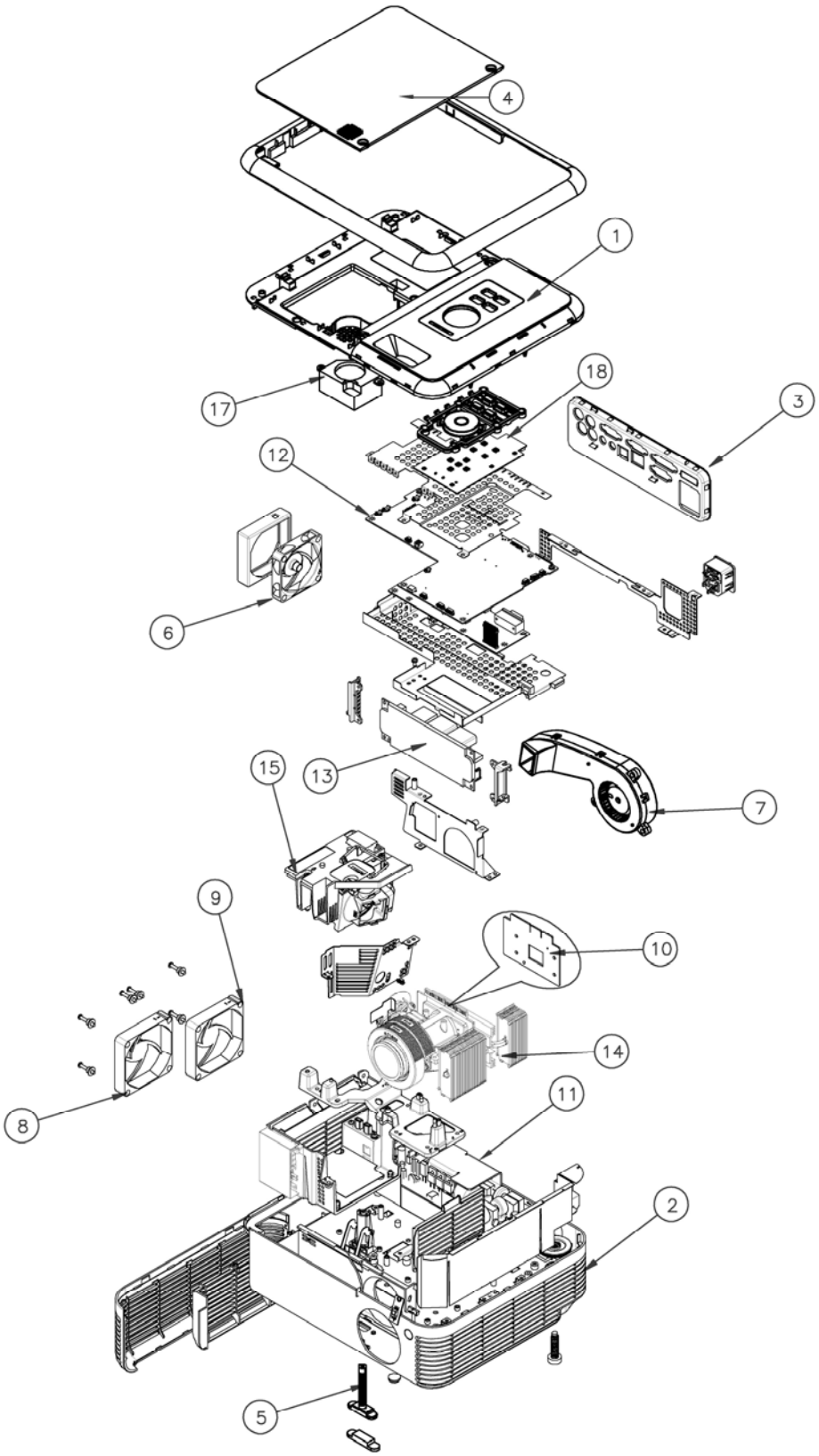
Apple Mac Compatibility

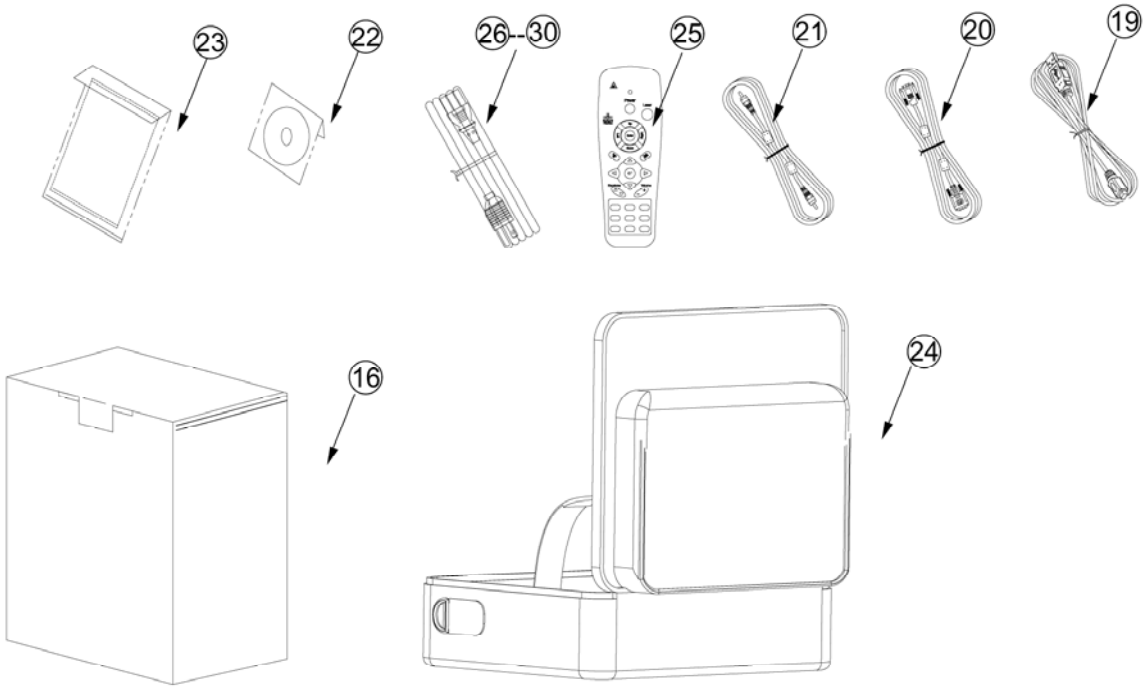
Resolution		Macbook	Macbook Pro (Intel)	Power Mac G5	Power Mac G4
	Hz-	Analog	Analog	Analog	Analog
800x600	60	O	O	-	-
800x600	72	O	O	O	O
800x600	75	O	O	O	O
800x600	85	O	O	O	O
1024x768	60	O	O	O	O
1024x768	70	O	O	O	O
1024x768	75	O	O	O	O
1024x768	85	O	O	O	O
1280x720	60	O	O	O	O
1280x720	75	O	O	-	O
1280x720	85	O	O	-	O
1280x768	60	O	O	-	O
1280x768	75	O	O	O	O
1280x768	85	O	O	-	O
1280x800	60	O	O	O	O
1280x1024	60	O	O	O	O
1280x1024	75	O	O	O	-
1680x1050	60	O	O	-	-
1920x1200	60	O	O	-	-

10-5.Spare Parts List

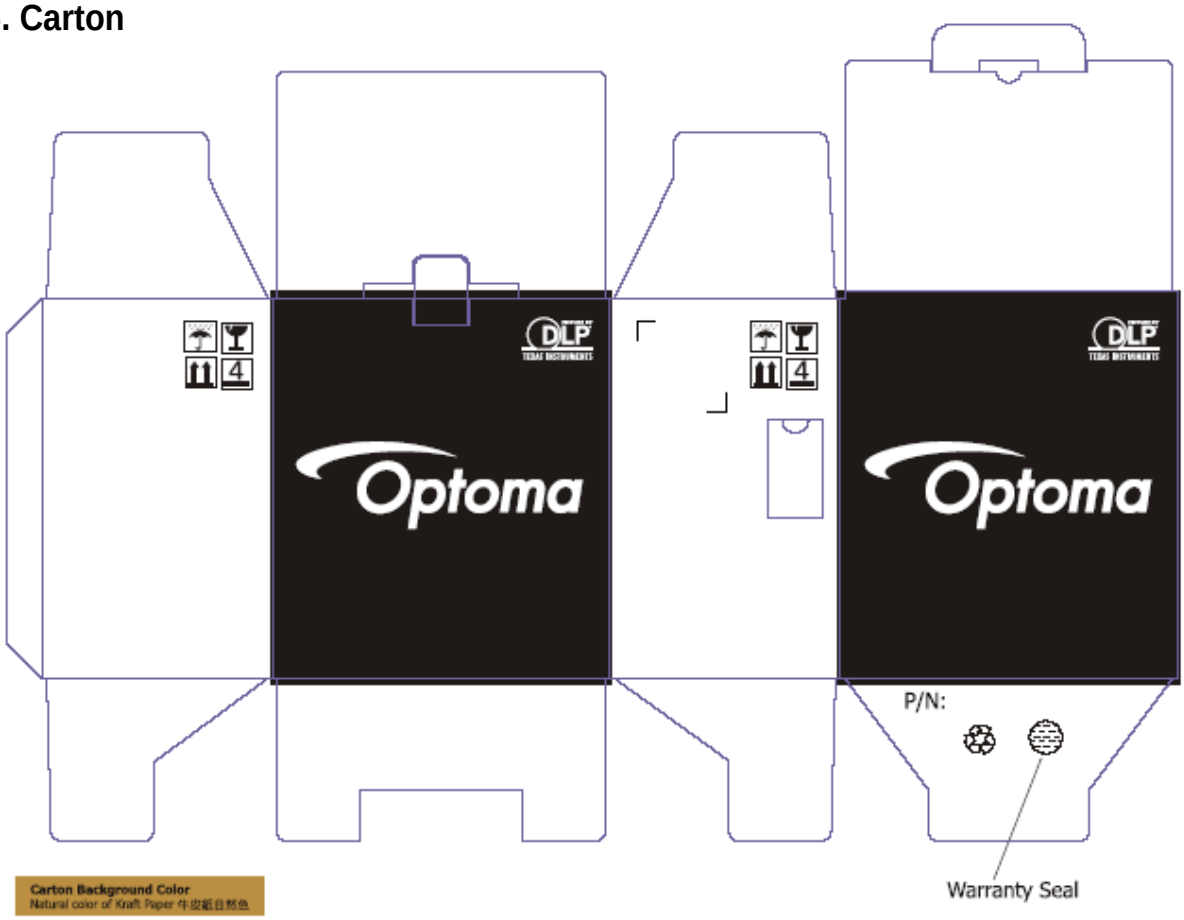
ver.00 2008/06/20

Item	TYPE	DESCRIPTION	P/N
1	Top Cover	CASE TOP PC+ABS 94V0 GRAY (Gray)	3398040700
		CASE TOP ASSY WHITE (White)	3398040800
2	Bottom Cover	CASE BOTTOM ASSY DP-3622 DUMMY (Gray)	3398033201
		CASE BOTTOM ASSY DP-3622 (White)	3398032602
3	Back Cover	CASE BACK ASSY DP-3633 (Gray)	3398040500
		CASE BACK ASSY DP-7626 (White)	3398040900
4	Lamp Cover	LAMP COVER PC+ABS 94V0 GRAY (Gray)	3392040301
		LAMP COVER PC 94V0 WHITE	3392027502
		LAMP COVER PC+ABS 94V0 WHITE (White)	3392084900
5	Front Foot	ADJ FRONT FOOT LEG PC 94V0 GRAY (Gray)	3392040201
		ADJ FRONT FOOT LEG PC 94V0 WHITE (White)	3392023202
6	Fan	DC FAN ASSY BUB0612HB-SM00 L160/120 60 B	3620629911
7	Fan	DC FAN ASSY NUB0612MB-R00 L35/5 60 B	3620631711
8	Fan	DC FAN ASSY AFB0712HB-SE32 L115/75 70 B	3620711111
9	Fan	DC FAN ASSY AFB0712HB-F00 L55/15 70 B	3620711211
10	DMD/B	PWB ASSY DMD BD TYPE A DDP2230 DP-7621	5600600726
11	P/B	PWB ASSY POWER BOARD J4P 280W	5600600777
12	M/B	PWB ASSY MAIN BOARD DP-3633 (EX774)	5600600868
		PWB ASSY MAIN BOARD DP-7626 (EW674)	5600600869
	IO/B	PWB ASSY IO BOARD J4P RJ45	5600600804
13	Ballast	LAMP DRIVER 280W NONE PULSE PT VIP O3	0990077000
14	Optical engine	MODULE 0.7" XGA OPTICAL DDP2230 280W(EX774)	5811100642-S
		OPTICAL MODULE 0.65" WXGA ASSY J4P W98 (EW674)	5811100659-S
15	Lamp	LAMP MODULE J4P E20.6 280W ASSY DP-3635	5811100173-SO
16	Carton	CARTON PAPER 434*378*258	3517129702
17	Speaker	SPEAKER ASSY DP-3622	3791001806
18	Board	PWB ASSY KEYPAD BOARD J4P-02	5600600271
19	Cable	CABLE SIGNAL USB USB L1800 IVORY	3081404900
20	Cable	CABLE SIGNAL D-SUB D-SUB L1800 BLK	3081405001
21	Cable	CABLE SIGNAL RCA RCA L200 GRAY	3080301101
22	CD	CD SOFTWARE PACKING ASSY DP-3633	3534070600
23	Manual	CARD QUICK START DP-3633 OPTOMA	5010074000
24	Case	CARRYING CASE PP 330*290*110	3523018900
25	Remote	REMOTE CONTROLLER 27KEYS DP-3622 JOTCG O	5041814200
		REMOTE CONTROLLER 27KEYS DP-3633/DP-7626	5041817100
26-30	Cable	AC POWER CORD 3P #18*3C L3000 BLK	3072050701
	Cable	AC POWER CORD 3P 3G*0.75mm^2 L3000 BLK U	3090211102
	Cable	AC POWER CORD 3P 3G*0.75mm^2 L3000 BLK E (EU)	3090211202
	Cable	AC POWER CORD 3P 3G* 1.0mm^2 L3000 BLK C	3090123801
	Cable	AC POWER CORD 3P 3G*1.0mm^2 L3000 BLK AU	3090211300


4
1
18
17
3
12
6
15
13
7
9
10
14
8
11
2
5


23
22
26--30
25
21
20
19
16
24

10-6. Carton


Optoma
Optoma
P/N:
Warranty Seal
Carton Background Color
Natural color of Kraft Paper 牛皮紙自然色